Vol. 1070 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

September 30, 1986

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 30, 1986 Volume 1070 Number 5

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Mar. 31, 1986.

Board of Appeals Decisions Rendered in the Month of Aug. 1986

Affirmed	220
Affirmed in Part	32
Reversed	77
Total	329

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Sept. 27, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,406,021 through 4,407,020
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JULY 13, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,338,728	06/251,578	7/13/82
4,338,732	06/217,534	7/13/82
4,338,737	06/224,307	7/13/82
4,338,741	06/252,311	7/13/82
4,338,742	06/285,965	7/13/82
4,338,743	06/243,839	7/13/82
4,338,746	06/234,743	7/13/82
4,338,779	06/220,012	7/13/82
4,338,801	06/244,901	7/13/82
4,338,830	06/295,861	7/13/82
4,338,831	06/295,853	7/13/82
4,338,842	06/277,264	7/13/82
4,338,845	06/236,241	7/13/82
4,338,884	06/241,645	7/13/82
4,338,914	06/249,989	7/13/82
4,338,916	06/245,605	7/13/82
4,338,935	06/221,898	7/13/82
4,338,946	06/221,342	7/13/82
4,339,034	06/289,762	7/13/82
4,339,043	06/230,860	7/13/82
4,339,046	06/228,060	7/13/82
4,339,060	06/239,993	7/13/82
4,339,067	06/221,447	7/13/82
4,339,079	06/231,096	7/13/82
4,339,123	06/272,111	7/13/82
4,339,238	06/223,173	7/13/82
4,339,281	06/294,736	7/13/82
4,339,291	06/232,324	7/13/82
4,339,308	06/220,851	7/13/82
4,339,327	06/256,898	7/13/82
4,339,332	06/263,129	7/13/82
4,339,339	06/237,683	7/13/82
4,339,358	06/218,260	7/13/82
4,339,399	06/267,494	7/13/82
4,339,436	06/237,097	7/13/82
4,339,439	06/225,945	7/13/82
4,339,446	06/236,605	7/13/82
4,339,459	06/216,164	7/13/82
4,339,471	06/255,505	7/13/82
4,339,486	06/218,944	7/13/82
4,339,488	06/218,818	7/13/82
4,339,491	06/242,822	7/13/82
4,339,528	06/265,108	7/13/82
4,339,529	06/269,528	7/13/82
4,339,558	06/270,027	7/13/82
4,339,584	06/262,187	7/13/82
4,339,588	06/277,593	7/13/82
4,339,621	06/237,774	7/13/82
4,339,627	06/229,263	7/13/82
4,339,636	06/219,883	7/13/82
4,339,637	06/227,622	7/13/82
4,339,642	06/225,951	7/13/82
4,339,652	06/221,131	7/13/82
4,339,760	06/241,261	7/13/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,427,825, Re. S.N. 824,384, Filed Jan. 23, 1986, Cl. 428/220, BLENDS OF POLYAMIDE AND ETHYLENE VINYL ALCOHOL COPOLYMERS, Alfieri DeGrassi, et al., Owner of Record: *Allied Corp., Morris Township, N.J.,* Attorney or Agent: Richard A. Negin, et al., Ex. Gp.: 154

4,541,168, Re. S.N. 873,907, Filed June 13, 1986, Cl. 29/579, METHOD FOR MAKING METAL CONTACT STUDS BETWEEN FIRST LEVEL METAL AND REGIONS OF A SEMICONDUCTOR DEVICE COMPATIBLE WITH POLYIMIDE-FILLED DEEP TRENCH ISOLATION SCHEMES, John R. Galie, et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Robert J. Haase, et al., Ex. Gp.: 114

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,794,732, Reexam. No. 90/001,073, Requested: Aug. 23, 1986, Cl. 514/460, RUMINANT FEED UTILIZATION IMPROVEMENT, Arthur P. Raun, Owner of Record: *Eli Lilly & Co., Indianapolis, Ind.,* Attorney or Agent: Donald Dunner, Ex. Gp.: 120, Requester: Owner

3,900,669, Reexam. No. 90/001,065, Requested: Aug. 11, 1986, Cl. 346/215, PRESSURE-SENSITIVE RECORDING SHEET WITH MICROCAPSULES HAVING POLYUREA WALLS, Masataka Kiritani, Owner of Record: *Fuji Photo Film Co., Ltd., Kanagawa, Japan,* Attorney or Agent: Louis Gubinsky, Ex. Gp.: 150, Requester: Kenneth Darnell, Arlington, Va.

4,062,981, Reexam. No. 90/001,070, Requested: Aug. 18, 1986, Cl. 426/278, HUMIDIFYING AND SHIRRING ARTIFICIAL SAUSAGE CASING, Douglas J. Bridgeford, Owner of Record: *Teepak Investment, Inc., Wilmington, Del.,* Attorney or Agent: Michael L. Dunn, Ex. Gp.: 130, Requester: Union Carbide Corp., Danbury, Conn.

4,160,892, Reexam. No. 90/001,068, Requested: Aug. 15, 1986, Cl. 219/83, METHOD AND APPARATUS FOR SEAM WELDING OVERLAPPED EDGES, Paul Opprecht, et al., Owner of Record: *Elpatronic AG, Zug, Switzerland,* Attorney or Agent: Ernest F. Marmorek, Ex. Gp.: 210, Requester: Soudronic, Ltd., Briarcliff Manor, N.Y.

4,381,331, Reexam. No. 90/001,069, Requested: Aug. 15, 1986, Cl. 428/224, NON-STICKING PLY END TURN-OVER BLADDER AND METHOD OF MANUFACTURE THEREOF, James L. Johnson, Owner of Record: *McCreary Tire & Rubber Co., Indiana, Pa.,* Attor-

ney or Agent: Walter J. Blenko, Ex. Gp.: 150, Requester: Webster B. Harpman, Youngstown, Ohio

4,467,932, Reexam. No. 90/001,067, Requested: Aug. 18, 1986, Cl. 220/18, EASY LIFT PIT LID, Robert M. Dabich, Owner of Record: *Inventor, Garden Grove, Calif.*, Attorney or Agent: Cislo, O'Reilly, et al., Ex. Gp.: 240, Requester: Craneveyor Corp., Sol El Monte, Calif.

4,515,759, Reexam. No. 90/001,066, Requested: Aug. 14, 1986, Cl. 423/220, PROCESS OF REMOVING HYDROGEN SULFIDE FROM GAS MIXTURES, Edward E. Burnes, et al., Owner of Record: *NL Industries, Inc., New York, N.Y.*, Attorney or Agent: C. James Bushman, Ex. Gp.: 110, Requester: Schmidt, Johnson, et al., Kansas City, Mo.

4,590,581, Reexam. No. 90/001,072, Requested: Aug. 21, 1986, Cl. 364/578, METHOD AND APPARATUS FOR MODELING SYSTEMS OF COMPLEX CIRCUITS, Curtis Widdoes, Jr., Owner of Record: *Valid Logic Systems, Inc., San Jose, Calif.*, Attorney or Agent: Robert C. Morgan, Ex. Gp.: 260, Requester: Owner

4,590,960, Reexam. No. 90/001,071, Requested: Aug. 19, 1986, Cl. 60/584, LIQUID PRESSURE APPARATUS, David Parsons, Owner of Record: *Automotive Products Public Ltd. Co., Leamington Spa, England,* Attorney or Agent: Claude A. Patalidis, Ex. Gp.: 340, Requester: Harness, Dicky, et al., Bloomfield Hills, Mich.

Expedited Service for Certified Copies of Trademark Registrations

On Oct. 4, 1986, expedited service for obtaining certified copies of trademark registrations will be available to the public. The cost of obtaining a certified copy showing title and/or status will be $10.00 plus $25.00 for the expedited service for a total of $35.00 per copy; a certified copy of the registered mark, not showing title or status, will be $5.00 plus $25.00 for expedited service for a total of $30.00. Requests received in the Post-Registration Section of Trademark Services Division, Crystal Plz. 2–4C24, before 12:00 noon on U.S. Patent and Trademark Office scheduled work days will be filled within three work days.

Requests for expedited service which are hand carried to the Post-Registration Section located in Crystal Plz. 2–4C24 will be available for pickup at the same location after 12:00 noon three work days later. Requests for expedited service which are mailed to the Patent and Trademark Office will be processed and mailed back to the requester three work days after they are received in the Post-Registration Section from the U.S. Patent and Trademark Office mail room. All requests for expedited service will be machine stamped when received in the Post-Registration Section and machine stamped upon completion by the Post-Registration Section.

Anyone requesting expedited service will be limited to five registration numbers per day. Limits on the number of registrations being certified are needed in order to ensure that service is not disrupted for routine requests for certified copies. The guarantee of service in three work days is based on the ability of the Post-Registration Section to process up to 1,000 expedited copies out of an average of 16,000 copies processed each year.

Inquiries about the service should be addressed to:

Patricia M. Davis
Administrator for Trademark Operations
Trademark Examining Operation
Crystal Plz. 2–3C06
(703) 557–3268

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Aug. 19, 1986.

Patent Terms Extended Under 35 USC 156

Certificates extending the terms with respect to the f were issued under the provisions of 35 USC 156 on Sept. 3, 1986.

Patent No. 4,014,986, granted Mar. 29, 1977, to Tilly, et al., Owner of Record: Guerbet S.A., Title: X-RAY CONTRAST MEDIA, Classification: 424–5, Term Extended: 2 years.

Patent No. 4,055,652, granted Oct. 25, 1977, to Walker, Owner of Record: Syntex (U.S.A.), Inc., Title: 1-[B(R-THIO)PHENETHYL]IMIDAZOLES AND DERIVATIVES THEREOF, Classification: 514–399, Term Extended: 2 years.

Patent No. 4,252,984, granted Feb. 24, 1981, to Manoury, et al., Owner of Record: Synthelabo, Title: PHENOL ETHERS, Classification: 564–349, Term Extended: 552 days.

Patent No. 4,258,041, granted Mar. 24, 1981, to O'Callaghan, et al., Owner of Record: Glaxo Group Ltd., Title: (6R,7R)-7[(Z)-2-(2-AMINOTHIAZOL-4-YL)-2-(2-CARBOXYPROP-2-OXYIMINO)ACETAMIDO]-3-(1-PYRIDINIUMMETHYL)-CEPH-3-EM-4-CARBOXYLATE AND SALTS THEREOF, Classification: 514–203, Term Extended: 483 days.

Patent No. Re. 27,757, Reissued Sept. 11, 1973, to Mirowski, Owner of Record: Mirowski, Title: STANDBY DEFIBRILLATOR AND METHOD OF OPERATION, Classification: 128–419D, Term Extended: 2 years

Service by Publication

A petition to cancel each of the registration identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Gloria Swanson Ltd., Syracuse, N.Y., Reg. No. 827,985, for the mark "ESSENCE OF NATURE", Canc. No. 15,057.

ERMA S. BROWN,
Administrator of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for August 1986:

Service Item	FY 1985 Goal (Calendar Days)*	FY 1986 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:			
Patents	22	22	29**
Trademarks	30	30	42***
Patent/Trademark Copies:			
Special Window Coupons	1	1	.5
Window Coupons	5	5	3
Mail Coupons	15	12	5
Letter Orders	24	16	12
Date of oldest unfilled order			Aug. 15, 1986
Current Mail Date being processed			Aug. 29, 1986
Certified Copies:			
Trademark Registrations	30	21	14
Applications-As-Filed	20	10	10
File-Wrapper/Contents	N/A	N/A	6
Walk-up Certification	1	1	1.3
Trademark Search Library:			
Filing Pending Marks	21	21	44***
Filing Reg. Certificates	3	Issue Date	3 days Late
Assignments:			
Patents	25	20	19
Trademarks	25	20	19
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	104****
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	98% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

* Unless otherwise noted.
** Monthly average reduced by 3 days.
*** Tapes received late from contractor.
**** Interval from fee payment to issuance is increasing because of the budget cut which necessitated the printing of 4,000 fewer patents than originally planned in FY 86.

IMPROVEMENTS TO SERVICES

- *File History Retrieval* —The Newington File Repository became fully operational in early Aug. when its electronic file ordering capability was activated. Stored at the Newington facility are all abandoned patent applications formerly located at the Federal Records Center in Suitland, Md., and U.S. patent numbers 3,600,000 through 3,999,999. This means the PTO now has under its direct control all patented files since 1972 and all abandoned files.

  Our goal for file turnaround from Newington is 12 hours, which is now being met, as compared to a usual five or more day turnaround from Suitland. Also, experience so far indicates a successful find rate of 90%, compared to a 66% find rate when the files were in the Federal Records Center.

- *Electronic Ordering System for Patent & Trademark Copies* — During the trial period, many users took the time to complete and return our evaluation and comment form. While we cannot adopt all suggestions we received due to cost and system constraints, we have addressed the most frequent suggestions and problems. The comment made most frequently was a request to limit to one time per order the need to choose the type of document being requested. Many users also suggested creating a standard address file so that those who order often would not have to reenter this information each time they placed an order. Vanguard Technologies Corp., our copy fulfillment contractor, worked on these suggestions with the data network service we use for EOS, Telenet, a U.S. Sprint Co. Together, they created a streamlined script for frequent EOS users. This new script incorporates both suggested changes and should reduce the amount of connect time for those who use it.

- *Photocopying Stools* — Users of the photocopying machines in the Public Search Room, North and South stack areas, will now find "high-backed" stools for comfort when doing high volume photocopying.

- *Express Copying Service* — Express copying in the Public Search Room is now available to users requiring 20 copies or less. One photocopier (SRS–8) located in the South Stacks and one reader printer (MIC–14) located in the North Stacks are dedicated for this service. This new service was recommended by members of the public.

CONSOLIDATED HELPFUL HINTS

A consolidation of Helpful Hints which have been published follows. An index is provided as a convenient reference.

Sept. 5, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

HELPFUL HINTS FROM THE PTO

U.S. Patent and Trademark Office
September 1986

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I. APPEALS

A. *Appeal Fees in Patent Cases*

Appeal fees deficiencies are frequent in the case of appeal fees, causing necessity for extension fees to cover the additional time consumed in making up the appeal fee deficiency.

II. APPLICATION FILES

A. *Requests for Allowed Patent Application Files*

Applicants or attorneys requesting files from the Publishing Division, Office of Publications, should make their request at least twenty-four hours in advance to ensure file availability. Attention is especially directed to out-of-town requesters who visit the Office, anticipating same day service. Although the Office is usually able to respond promptly, unexpected inconvenience can be avoided if arrangements are made in advance.

Inquiries and requests should be directed to the Correspondence Section at (703) 557–6397 or (703) 557–6398 between the hours of 8:30 a.m. through 5:00 p.m. on weekdays.

B. *Returning Files to the File Information Unit (FIU)*

As follow-up to a previously identified problem involving FIU file histories being left in the Public Search Room rather than being returned as required, all charge cards were monitored for a three week period.

Of the 2,011 files obtained, a total of 32 were not properly returned. Although the percentage of abuse is not great, customers are again reminded that files obtained through the FIU are official government records which must be returned by 7:45 p.m. on the same day they are obtained. Additionally, files obtained through the FIU shall not be removed from the confines of the Public Search Room at any time.

FIU personnel will continue to periodically monitor this problem. Should individual patterns of abuse be discerned, administrative sanctions up to termination of access privileges will be applied.

III. APPLICATION PAPERS

A. *Addressing Papers Involving Secrecy of Certain Inventions and Licenses to Export and File Applications in Foreign Countries (37 CFR 5)*

All correspondence in connection with 37 CFR 5 should be addressed to:

Commissioner of Patents and Trademarks
(Attention Licensing and Review)
Washington, D.C. 20231

Improperly addressing such correspondence may delay delivery and could result in violations of 37 CFR 5. See 37 CFR 5.33 regarding correspondence.

B. *Amendments After Final for Patent Applications*

Amendments under 37 CFR 1.116 would be greatly expedited if they were headlined with the title "Amendment After Final Rejection," with that title underlined in red. This would facilitate ready identification of these amendments by the PTO support staff and expedite docketing and delivery to the examiner for special treatment. In many cases this would avoid the necessity for extensions of time and filing unnecessary notices of appeal.

C. *Data To Be Included On Patent and Trademark Papers Filed in the PTO In Response To Office Actions*

Perhaps the greatest cause of delay and wasted time in the support sections of the PTO is in trying to match papers bearing incorrect or incomplete data with applications. Because some trademark papers are not clearly identified as pertaining to trademark applications, they are frequently misrouted to the patent examining group.

On all papers related to *patent* applications, type the word "Patent" in the upper right-hand corner of the document. Also, please include the correct serial number, filing date, inventor's name, and title of the invention. Additionally include the examiner's name, and group art unit number or other identifying data found on the most recent letter from the PTO. (37 CFR 1.1(a)). However, please note that an organizational restructuring of the Patent Examining Corps has resulted in many applications being reassigned to new Groups and Art Units. Your attention is directed to the NOTICE OF CHANGES IN THE PATENT EXAMINING CORPS that appeared in the OFFICIAL GAZETTE on June 26, 1984, (1043 OG 23), which identifies the Group Art Unit of each examiner (1043 OG 40 through 1043 OG 67). Letters mailed from the Groups after Apr. 15, 1984, should reflect the current identifying data.

For all papers related to *trademark* applications, type the word "Trademark" in the upper right-hand corner of the document. Also, please set forth the applicant's name, correct serial number (including series number which currently is "73"), filing date, law office, examining attorney and mark.

Trademark documents for which no fee is required at the time of filing (e.g., amendments to applications and requests for extensions of time to file an opposition) should continue to be addressed:

Box 5
Commissioner of Patent and Trademarks
Washington, D.C. 20231

Mail directed to the Trademark Trial and Appeal Board should have "Attention TTAB" on the envelope in addition to "Box 5".

D. *Express Mail*

Many applicants are losing the advantage of receiving the date a paper or fee was deposited at the Post Office when "Express Mail" is used due to a failure of following proper procedures. According to 37 CFR §1.10, any such paper or fee must include a certificate of mailing by "Express Mail," signed by the person mailing the paper or fee.

Often, the certificate is missing, illegible, inaccurate, incomplete, or difficult to locate. As a result, the paper or fee is considered to have been filed on the date of receipt in the PTO.

To ensure papers and fees sent by "Express Mail" are accorded the proper certificate date, the following suggestions and reminders are offered:

1. Each document must have a certificate of mailing typed on or affixed to the document.
2. The certificate should be placed on the first page of the document or the covering letter to ensure easy accessibility.
3. The certificate should be legible.
4. Dates on the certificate must correspond to dates on the Express Mail label.
5. Each certificate must have an original signature.

The preferred wording and information to be included on this certificate is as follows:

"Express Mail" Mailing Label No. (*insert B no. from Express Mail label*)
Date of Deposit (*insert date from Express Mail Label*)

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office To Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

(*Typed or printed name of person mailing paper or fee*)
(*Signature of person mailing paper or fee*)

By following these procedures, problems concerning filing dates should be minimized.

E. *Express Mail (Continuation)*

The Patent and Trademark Office (PTO) continues to receive correspondence filed under the provisions of 37 CFR 1.10 in which the certificate of mailing by "Express Mail" certifies that the correspondence is being mailed on one date while the "Express Mail" label shows a "Date-In" on a different date. This usually occurs when the "Express Mail" package is deposited in a remote "Express Mail" receptacle or mailbox after the last pick-up and accordingly are not being picked-up and processed by the Postal Service until the next business day. The question as to the treatment of such a situation was covered in the final rulemaking published on Jan. 20, 1983, at 48 FR 2696-2714 and on Feb. 1, 1983, at 1027 O.G. 9. The following comments appear therein:

> "Comment: One person questioned what treatment will be accorded a paper placed in an 'Express Mail' box receptacle after the box has been cleared for the last time on a given day."
>
> "Reply: The paper will be considered to be deposited as of the date of receipt indicated on the 'Express Mail' mailing label by the Postal Service clerk."

While the number of such instances in which the certificate states one date and the receipt states a different date is not large when compared to the total number of filings under the provisions of 37 CFR 1.10, it does cause problems for the PTO and the applicants involved when it does occur.

In view of the above, it is recommended that where the filing date of a paper or fee is critical, e.g., the filing of a patent application, and particularly when the deposit by "Express Mail" is being made late in the business day, the correspondence should be personally delivered to a Post Office where receipt of the "Express Mail" package by the Postal Service on the date indicated in the certificate of mailing by "Express Mail" can be immediately obtained from a Postal Service clerk.

Applicants are also reminded that 37 CFR 1.10 requires that the certificate of mailing by "Express Mail" be signed by the person *actually mailing* the paper or fee; i.e., the person who actually deposits the paper or fee with the U.S. Postal Service. The PTO has encountered some instances in which the certificate of mailing by "Express Mail" was signed by an attorney and the deposit was made by the attorney's secretary or another member of the attorney's staff. This is improper under the provisions of 37 CFR 1.10. This section differs in that regard from 37 CFR 1.8.

F. *Information to be Included on Papers Filed in Pending Applications*

The Patent Examining Corps is currently in the midst of a workload balancing program among the Examining Groups. To facilitate prompt matching of incoming papers with applications it would be most helpful if the following information appears at the top of all papers filed in pending applications:

1. Serial Number (checked for accuracy)
2. Group Art Unit Number (from the most recent paper received from a Group Art Unit, or from the filing receipt if no paper has been received from a Group Art Unit)
3. Name of the Examiner (who prepared the most recent Office Action)
4. Title of the Invention
5. Filing Date (of the application)
6. Inventor's Name

G. *Mailing Responses to the PTO*

In general, it would eliminate or greatly reduce processing steps by the PTO support staff, and will avoid interruption of the examiner's work, if a few simple, general rules were followed in regard to mailing of the responses to the PTO.

1. After a patent or trademark application is filed, please avoid filing additional papers (other than those requesting a filing receipt or those required by the Office) until the filing receipt or return post card identifying the Serial Number and Patent Examining Group Art Unit or Trademark Law Office has been received.
2. In *patent* applications, requests for extensions of time, changes of address, proposed drawing corrections, and petitions are sometimes incorporated in the remarks section or at the beginning of papers entitled "Amendment" or "Response." In *trademark* applications, change of address and powers of attorney are sometimes incorporated in the remarks section or at the be-

ginning of papers entitled "Amendment" or "Response". Please present such items in separate papers, appropriately titled, since they are all handled by different personnel (37 CFR 1.4(c)). However, please include a statement in the amendment/response describing the paper being filed.

3. Where a supplemental or preliminary amendment is found necessary in patent or trademark applications, please telephone the examiner and request that the examiner delay action for a certain time in order to avoid crossing in the mails of the amendment and the Office action.
4. File patent and trademark documents which have no particular time or sequence requirement with materials submitted in response to the statutory or regulatory requirements. Examples are certified copies of foreign documents to support priority and formal drawings in patent applications or changes of Power of Attorney or Mailing Address following first action.
5. If a disclosure statement is to be filed before an Office action, file it when the application is filed. Some Group Art Units have greatly reduced the pendency to first action. Hence, many examiners are taking up new applications before an information statement is matched with the application.
6. Assignment documents should be filed with accompanying transmittal letters bearing current return addresses to assure prompt processing.
7. Letter and coupon orders for patent copies must contain the requester's name and current mailing address so that the order can be filled.

H. *PTO Special Mail Boxes*

Special mail box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 4	—	Mail for the Office of Legislation and International Affairs.
Box 5	—	"No fee" mail related to trademarks.
Box 7	—	Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8	—	All papers for the Office of the Solicitor.
Box 9	—	Coupon orders for U.S. patent and trademark copies.
Box 10	—	Orders for certified copies of patent and trademark applications.
Box 12	—	Contributions to the Examiner Education Program.
Box AF	—	Amendments or Correspondence after Final Rejection of patent applications.
Box Interference	—	Communications relating to interference and applications and patents involved in interference.
Box M. Fee	—	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Pat. Ext.	—	Applications for patent term extension.
Box PCT	—	Mail related to applications filed under the Patent Cooperation Treaty
Box Reexam	—	Mail related to reexamination applications.

I. *Reissue Amendments*

In order to avoid unnecessary delays in the issuance of reissue applications, applicants and their attorneys are reminded to exercise caution and give sufficient attention to 37 CFR 1.121(a) and (e) in presenting reissue amendments to the PTO. The practices and procedures vary somewhat from regular utility application amendments, and this frequently causes clerical problems and editorial revisions.

MPEP Sec. 1455 provides guidance for proper entry of amendments and claim numbering. Publication of the reissue application(s) may be needlessly postponed while formal irregularities are corrected.

J. *Reissue Oaths and/or Declarations*

Since standard oath and declaration forms are not used in reissue applications, applicants are commonly neglecting to include averments required by 37 CFR 1.63 per 37 CFR 1.175(a). The most frequent omissions involve the "duty of disclosure" acknowledgment, and the "reviewed and understands" statement. Such omissions usually necessitate additional handling and correspondence, and cause undue time delays, which result in postponement of publication of the reissue patent.

A frequent problem in reissue practice is the failure of applicants to satisfactorily comply with 37 CFR 1.175 regarding the description of all errors of the original patent in the reissue oath or declaration. Applicants are required to specify errors in the original reissue oath or declaration at the time of filing the reissue application. They must also specify, in a supplemental oath or declaration, any errors brought to their attention during the prosecution, as well as the circumstances surrounding the occurrence or discovery of these errors. Every departure from the original patent represents an "error" and must be particularly and distinctly specified and supported in the original, or a supplemental, reissue oath or declaration under 37 CFR 1.175. See MPEP Sec. 1414 and 1444. Postponement of publication of the reissue patent may result if these requirements are not met at the time of allowance.

K. *Response to Final Rejection — Avoiding Extension Fees*

In regular applications wherein a three (3) month Shortened Statutory Period (SSP) is

set for response to a Final Rejection, the response would best be filed within two (2) months of the date of the Office Action. If filed within two (2) months, any Advisory Action mailed after the SSP expires will reset the SSP to expire on the date of the Advisory Action for extension fee purposes, but never more than six (6) months from the date of the Final Rejection.

L. *Response to Final Rejection — Expediting Processing and Reply by PTO*

In order to ensure the quickest reply to an amendment or response after Final Rejection the paper should be marked in the upper right portion:

"RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP (Insert Group Number)";

and the envelope should be marked in the lower left corner:

"BOX AF"

The marking on the paper preferably should be written in, highlighted by, or encircled with, a bright color felt-point marker.

If the paper is being hand-carried to the Examining Group (instead of mailing to Box AF), the envelope also should be marked:

"RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP (Insert Group Number)"

M. *Return Post Card*

If a receipt for any paper filed in the Patent and Trademark Office is desired, it may be obtained by enclosing with the paper a self-addressed post card identifying the paper. The Patent and Trademark Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to clearly identify the paper for which receipt is requested. For example, the card should identify the applicant's names(s), serial number, filing date, interference number, etc. Also, the paper(s) should be identified by specifying the type thereof, namely affidavit, amendment, appeal, itemized components of applications, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

A post card receipt which itemizes and properly identifies the papers which are being filed serves as prima facie evidence of receipt in the PTO of all the items listed thereon on the date stamped thereon by the PTO unless the post card receipt has been annotated by the PTO to indicate that one or more items were not received. A post card receipt will *not* serve as prima facie evidence of receipt in the PTO if the papers are not itemized in a detailed manner, e.g., number of pages of specification and number of sheets of drawings, or if the post card receipt has been annotated to indicate that one or more items was not received.

When papers for more than one document are filed under a single cover, a return addressed post card should be attached to the paper for each document for which a receipt is desired.

N. *Transmittal Letters*

When statutory fees are to be charged to a deposit account, the processing of the application can be facilitated by submitting the applicant's transmittal letter or other correspondence specifying the account to be charged in triplicate. Submission of these documents in triplicate will eliminate the need for the Mail Room to photocopy the document and thereby reduce the processing time of incoming mail.

IV. ASSIGNMENTS

When requesting correction or updating of a previously recorded patent or trademark assignment document, providing the reel and frame number of that document to the Assignment Branch will greatly expedite the recording process.

To ensure the correct printing of ownership information on a Trademark Registration at issue date, provide the Trademark Office examining attorney with the reel and frame number of the appropriate assignment document as soon as you are notified of it.

V. CERTIFICATES OF CORRECTION

A. *Accurate Requests*

Many requests for "Certificates of Correction" result from a perfunctory comparison of the issued patent with the attorney's application file, without investigating whether the recitation in the issued patent is correct. In many instances, change to the PTO file wrapper has been caused by the examiner prior to printing of the patent in order to make appropriate corrections to the file.

VI. CERTIFICATION SERVICES

A. *Certification Services*

Expedited service requests for certification of copies that have been made by the requester shall be limited to those files open for public inspection. If there is such a need for expedited service, the request should be made to the Manager, Examination Services Division. All other requests for copies must be made to the Certification Branch, which will fill your request within 7 days or less.

B. *Questions Frequently Asked*

Q. What does "certified" mean?
A. Authentication of copies by ribbon and seal of the PTO with the signature of an officer authorized by the Commissioner of Patents and Trademarks.

Q. What does an application consist of?
A. (1) Specification (2) Claims (3) Oath or Declaration (4) Drawings, when necessary, and (5) Filing Fee.

Q. What does a file wrapper and contents (file history) consist of?
A. The original application papers plus all correspondence between the applicant/attorney of record/assignee and the PTO.

Q. Why are certified copies of the application-as-filed required?
A. Since the rights granted by a U.S. patent extend only throughout the territory of the U.S. and have no effect in a foreign country, an inventor who wishes patent protection in other countries must apply for a patent in that country by filing a certified copy of his or her U.S. application.

Q. What regulations govern the filing of a U.S. application in a foreign country?
A. There is a treaty relating to patents which involves 92 countries and is known as the Paris Convention for the Protection of Industrial Property. It provides that each country guarantees to the citizens of other countries the same patent rights that it gives to its own citizens.

Q. How does one request copies of an application-as-filed?
A. By submitting a written order identifying the application by serial number, filing date, name of inventor and title of invention to:

U.S. Patent and Trademark Office
Box 10
Washington, D.C. 20231

Q. Can anyone request a copy of a pending application?
A. No. Pending applications are preserved in secrecy. No information or copies may be obtained without written authority of the applicant, attorney of record, or the assignee, if any. Such written consent must accompany the request for copies.

Q. Can orders for copies be placed by phone?
A. No. All orders must be in writing.

Q. May office copies of my application be sent to the PTO for certification?
A. No. We do not certify copies prepared outside the PTO.

Q. Will the PTO mail certified copies ordered directly to a foreign country?
A. No. With respect to the exportation of technical data, the PTO discontinued the practice of forwarding direct to any foreign country certified copies of U.S. applications ordered by residents of the United States.

Q. Are cited references in a file automatically furnished when a file wrapper and contents is requested?
A. No. Cited references are not included as papers comprising the file history. References cited are furnished only if specifically requested.

Q. Can cited references, when requested, be certified with the file wrapper and contents under one certificate?
A. No. Each reference must be certified separately.

Q. Are there instances when references are included in a file wrapper and contents?
A. Yes. If the references are submitted as attachments to a response from the applicant and if such response is entered and made a part of the file.

Q. Exclusive of applications-as-filed and file wrappers and contents of patented files, what other types of copies may be obtained from the Certification Branch?
A. The following items may be obtained:

1. Certified copies of issued U.S. patents and designs.
2. Certified copies of foreign patents.
3. Certified copies of publications from the Scientific Library.
4. Certified copies of Office letters.
5. Certified duplicate filing receipts.
6. Certified copies of an assignment and application-as-filed, under one certificate.
7. Copies of disclosure documents.
8. Copies of the following files:
   a. Defensive publication files.
   b. Reexamination files.
   c. Interference files.
   d. Trademark files.
   e. Opposition files.
   f. Concurrent use proceedings files.
   g. Statutory Invention Request.
   h. Certified copies of assignment documents.
   i. Abstract of title.

Q. What is required to have a file reconstructed?
A. Submit a written request along with a notice from the PTO Official Search unit stating that the file cannot be located.

Q. What procedures are used to reconstruct a file?
A. The Certification Branch requests the loan of a copy from the attorney of record, assignee or applicant.

Q. How long does it take to reconstruct a file?
A. The time is dependent upon the receipt of the copy from the attorney. Normally it takes about two months.

VII. DRAWINGS

A. *Application File Drawings*

Application Branch personnel are having some difficulty matching drawings with applications during pre-examination processing. It would be helpful if the applicant's name, docket number, and the title of the invention were put on the back of the drawings. This may be done by writing lightly on the drawings or by using gum labels.

When the Office receives formal or substitute drawings, a cover letter identifying the application by serial number should accompany them. It is extremely difficult to associate the drawings with the files when this information is missing. The application serial number should be placed on the sheet of drawing in accordance with 37 CFR 1.84(l).

According to 37 CFR 1.84(l), identifying indicia (such as the attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2¼ inches may be placed in a centered location between the side edges within three-fourths inch of the top edge. Either this marking technique on the front of the drawing or the placement of this information on the back of the drawing is acceptable. However, for identification of the serial number, the PTO prefers that it be placed on the front.

B. *Submission of Corrected Drawings in Allowed Patent Applications*

When drawings need to be corrected in an allowed application, the applicant is *required* to submit *acceptable* corrected drawings within a three-month shortened statutory period. Within that three-month period, two weeks should be allowed for review of the correction by the Office. If a correction is determined to be unacceptable by the Office, the applicant must arrange to have an acceptable correction re-submitted within the original three-month period to avoid the necessity of obtaining an extension of time and of paying the extension fee. Therefore, the applicant should file corrected drawings as soon as possible following the setting of the three-month shortened statutory period.

C. *Submission of Drawings*

For your convenience and for more effective handling of any drawing corrections which may be necessary, please DO NOT SUBMIT ORIGINAL DRAWINGS WITH PATENT APPLICATIONS. DO SUBMIT THREE HIGH QUALITY COPIES. If the copies submitted pass the formality review and patent examination, no substitute drawings will be necessary. If corrections are necessary, they should be made to the original drawings. Either a good copy of the corrected drawings or the corrected original can then be submitted after the Notice of Allowability is mailed.

VIII. EXTENSIONS OF TIME

A. *Extension of Time Fees in Patent Cases*

Many requests for extension of time are being filed with insufficient fees. In the overwhelming majority of these cases the deficiency is due to the fact that an old fee schedule has been used.

In those instances where there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases.

Please note that effective Oct. 5, 1985, the *extension fees* in *patent* cases are as follows:

	Small Entity	*Non-small Entity*
One Month Extension	$28	$56
Two Month Extension	85	170
Three Month Extension	195	390
Four Month Extension	305	610

B. *Extensions of Time for Patent Applications*

An extension of time under 37 CFR 1.136(a) is not permitted in the following instances:

1. Where an applicant is so notified in an Office action as, for example, in a Reissue application involving a litigated patent.
2. Where the application is involved in an interference declared pursuant to 37 CFR 1.207. See 37 CFR 1.245 for provisions governing extensions of time in interference proceedings.
3. In reexamination proceedings. See 37 CFR 1.550(c) for extensions of time in reexamination proceedings.
4. In PCT international applications. In PCT applications, the only extensions permitted are for corrections of PCT Article 14 defects in international applications before the Receiving Office.

C. *Extensions of Time in Patent Cases (Supplemental Amendments)*

If a timely and complete response has been filed after a *Non-Final* Office Action, an extension of time *is not required* to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.

If a timely response has been filed after a *Final* Office Action, an extension of time *is required* to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run.

D. *Extension of Time Policy*

Where an extension of time is required to file a response in a timely manner, the response is not considered complete until the response, fee, and request or petition for an extension of time are received. The fee and request or petition must be filed before the expiration of the extended period requested. The fee cannot be paid outside the statutory six-month limit for the period of response.

The extension of time policy for after final practice is set forth in MPEP §§706.07(f) and 1302.04. In essence, where applicants' approval is not needed to amend the claims, no extension of time is required. However, if applicants' approval is required and applicants did not file their response within two months of the FINAL REJECTION, the appropriate extension of time must be purchased.

If applicants have a deposit account, it is recommended that applicants file, in an individual application, a general authorization to charge any of the fees set forth in 37 CFR §§ 1.16 to 1.18 to a deposit account for the entire pendency of the application (1032 OG 32).

Also, it should be noted that extensions of time may be purchased for extending the time required to pay for the request for an oral hearing before the Board of Appeals. MPEP §1209(I). The time for a request and fee for an oral hearing is one month from the date of the Examiner's Answer or any supplemental Examiner's Answer.

E. *Extensions of Time in Patent Cases*

Submission of the appropriate extension fee under 37 CFR 1.136(a) is to no avail unless a request or petition for extension is filed. Frequently, the request is omitted, which then requires an additional extension fee to cover the period to the date of the request. Occasionally, the application is held abandoned because the six month maximum statutory

period has expired before detection of the omission of the request for extension. It is critical that a paper specifically requesting the extension be filed with late responses. It is also wise to use the Certificate of Mailing practice when requesting extensions.

Extensions of time by fee payment under 37 CFR 1.136(a) are appropriate for filing of the Brief on Appeal in regular applications. No more than four months may be granted under 37 CFR 1.136(a). Beyond those four months, any further request must show sufficient cause under 37 CFR 1.136(b), and no additional extension fee is appropriate.

An extension of time is not required in order to hold an interview with the examiner. However, an extension is required for the purpose of filing a follow-up amendment by applicant and/or for the entry of an Examiner's Amendment requiring approval of the applicant.

Extensions of time are appropriate for the purpose of achieving continuity between parent and continuing applications. A separate paper requesting the extension of time must be filed in the *parent* application. It would be useful to file a *copy* of that request or petition with the papers constituting the filing of the continuing application.

IX. MAINTENANCE FEES

A. *Fee Address and Payer Number*

Effective Nov. 1, 1984, 37 CFR 1.363 provides for a "fee address" to be entered in the Office patent file records for use in all correspondence relating to maintenance fees. The fee address is in addition to the "correspondence address" under 37 CFR 1.33 which will continue to be used for all reexamination and interference purposes. If no separate fee address is specified, the correspondence address will also be used for maintenance fee correspondence.

In order to simplify changes in address by patent owners having several patents, and data input by the Patent and Trademark Office, a "payer number" will be assigned to each fee address when a fee address is presented to the Office in a patent or earlier upon request. A request for a payer number before a maintenance fee is paid or due will permit a patent owner to request that the fee address and payer number be recorded in the Office records of the patents owned on which maintenance fees are due so that all notices relating to maintenance fees will be sent to the fee address.

The Patent and Trademark Office has established a procedure for assigning a payer number upon request by a patent owner or a party responsible for paying maintenance fees. Such a party may be, for example, the finance office of a corporation or of a separate organization specializing in maintenance fee payments. Under the procedure, a patent owner or other party may request a payer number for a particular fee address by writing to:

Commissioner of Patents and Trademarks
Box M. Fee
Washington, D.C. 20231

Each request for a payer number should include:
— the fee address to be used by the Office,
and
— the telephone number of the fee addressee to be used to resolve problems.

After receipt of a payer number, it may be used to indicate to the Patent and Trademark Office the fee address to be used in particular patents on which maintenance fees will become due and in applications in which issue fees have been or are being paid. Any request for entry of a payer number or fee address in the Office records of a patent, however, must be signed by the patent owner or his or her attorney or agent of record.

After a payer number has been assigned, it should be used in all future maintenance fee payments and related correspondence. However, where a payer number has not been previously entered in the Office records for a particular patent, the mere indication of a payer number at the time of payment of the maintenance fee, without the signature of the patent owner or the owner's attorney or agent of record, will not serve to make the payer number of record in the Office for that patent.

The problems which most often arise in connection with attempts to establish a fee address in a particular patent or group of patents is that the request is being signed by an attorney who is not of record in each of the patents. This results in the request being entered only in part.

Also, when the request is signed by an owner of the patent, the records of the Assignment Branch do not always reflect such ownership. Where the assignment was recorded prior to Dec. 1980, it would help the Office if the PTO reel and frame number of the assignment recordation were presented in the paper requesting that a fee address be entered, and if the person signing the request would indicate his or her title.

Lastly, as fees are now being submitted for payment in patents that issued three or four years ago, if a fee address has not been established, please be sure that the current correspondence address has been made of record.

B. *Maintenance Fee Transmittal Form Notice*

Where maintenance fee payments are to be made by authorization to charge a deposit account, the Maintenance Fee Transmittal Form, should reflect *both* the Payor's Name *and* signature in the bottom left corner thereof.

X. NEW APPLICATIONS

A. *Continuation or Divisional Application*

When filing under Rule 1.60 retain at least one original claim from the parent application to assure a complete application. Only amendments reducing the number of claims or adding a reference to the prior application (Rule 1.78(a)) will be entered, upon request, before calculating the filing fee and granting the filing date. *Reminder*: Applicant cannot file a CIP (continuation-in-part) under Rule 1.60.

B. *File Wrapper Continuation (FWC) Applications*

Many continuation applications filed under 37 CFR 1.62 (FWC) contain no preliminary amendment to the claims which were finally rejected in the parent application. The result

is a first action final rejection of these claims. Applicants should file any desired amendments at the time the application is filed under 37 CFR 1.62, since the Office is treating these applications as "Special" and an action on the merits will be rendered quite promptly.

C. *File Wrapper Continuation*

To expedite processing under Rule 1.62, make certain that the parent serial number cited in the transmittal letter is the correct serial number.

D. *Information Cited on Form PTO–1449*

The Public is encouraged to use Form PTO–1449, "Information Disclosure Citation," when preparing a statement under 37 CFR 1.97–1.99 (see MPEP §609). This form provides the Office with a uniform way of listing the citations and a vehicle from which the information thereon can be printed on the issued patent.

Recently, citations are being presented on various forms prepared by the public rather than on Form PTO–1449. As a result, delays are cropping up in the printing process. Because the printer has difficulty in following the various formats and is having to query the examiner each time a non-PTO–1449 form is used, you are encouraged to use the Form PTO–1449 with any submission under 37 CFR 1.97–1.99.

Note that listing citations on Form PTO–1449 does not raise an irrebuttable presumption that the citation is prior art. A holding by an examiner that any citation on Form PTO–1449 is prior art to claimed subject matter can be rebutted by procedures commonly used to rebut the prior art status of an examiner's citations on Form PTO–892, "Notice of References Cited".

Among the information that should be provided on Form PTO–1449 is the date of the citation. In addition, it is helpful if the class and subclass of each citation is provided. It is appreciated that classification information may not be known at the time Form PTO–1449 is prepared. When classification information is not known, draw a line in the boxes under the class and subclass heading adjacent to the citation for which classification information is not known.

E. *New Application Filing Problems*

Applications continue to be filed incorrectly under both 37 CFR 1.60 and 37 CFR 1.62. This causes problems not only for applicants but also for the Patent and Trademark Office. Filing dates are not granted to applications which do not comply with the rules. As a result, petitions with fees are required to be filed in such applications before a filing date will be granted.

Most often, the problems that arise in this area can be characterized as the following:

1. Applicants continue to fail to comply with the requirements of 37 CFR 1.60 with regard to what must be submitted upon filing under the rule. This is true even after the clarifying amendments (effective Apr. 1, 1984) were made to the rule. This problem was also addressed in the Official Gazette Notice of May 8, 1984 entitled "Filing of Patent Applications Pursuant to 37 CFR 1.60."
2. A true copy of the prior application must be filed including the specification (including claims), drawings, oath or declaration showing the applicant's signature or an indication it was signed, and any amendments referred to in the oath or declaration filed to complete the prior application.
3. Applicants are using transmittal forms which request filings under one rule when, in fact, they wish to file under another rule. For example, a transmittal form requesting filing under 37 CFR 1.62 may be filed when it was really desired to file a divisional application under 37 CFR 1.60 and not to abandon the parent application.

   Applications have also been filed with a transmittal form requesting filing under 37 CFR 1.60 when it was intended to file under 37 CFR 1.62. The confusion in the record of such applications must be clarified by a decision on petition before the applications can be processed for examination.
4. Some applicants fail to realize that the parent application is abandoned by the filing of a continuing application under 37 CFR 1.62. Paragraph (g) of 37 CFR 1.62 states:

   > "The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application."

   Correction after such a mistaken filing under 37 CFR 1.62 usually requires a revival of the parent application under 37 CFR 1.137(a) or (b) which expends resources of both the applicant and the PTO.
5. Some applicants are attempting to file continuing applications under 37 CFR 1.62 after payment of the issue fee in the parent application. Such applications are improper and are not entitled to a filing date. Additionally, such filings will not affect the prior application, i.e., the parent application may issue as a patent. Paragraph (a) of 37 CFR 1.62 specifies that continuing applications may be filed under 37 CFR 1.62 "before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application".
6. Some applicants are attempting to file continuation-in-part applications under 37 CFR 1.62 with a new specification rather than with the changes made by amendment to the prior application. As stated in 37 CFR 1.62(a) filings under 37 CFR 1.62 use the specification of the prior application.

   Paragraph (c) of 37 CFR 1.62 also states:

   > "In the case of a continuation-in-part application which *adds and claims additional disclosure by amendment*, an oath or declaration as required by §1.63 must also be filed. . ." (emphasis added)

F. *Patent Applications*

We are trying to expedite and improve preliminary processing of patent applications. Please help by putting patent applications and associated papers (e.g., assignments) in separate envelopes apart from all other mail. Identify on the outside of the envelope "PATENT APPLICATION".

Petition for License

Rule 5.12 states that "filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject of the application. The filing receipt will indicate a license is granted". There is no need to request a corrected filing receipt deleting the words "License Granted". Its intent is to provide the necessary acknowledgement for those filing abroad.

G. *NEW APPLICATIONS — Payment of Processing and Retention Fees*

An application, which has become abandoned pursuant to 37 CFR 1.53(d) for failure to pay the filing fee, will be disposed of unless the processing and retention fee set forth in §1.21(l) is paid within the 1-year period referred to in §1.53(d). Moreover, the processing and retention fee must be timely paid in order to obtain certified copies of the application (e.g., for convention priority purposes) or to establish in a later filed application the filing date benefit of an earlier copending application under 35 USC 120 and 37 CFR 1.78(a)(3). Therefore, an application which has become abandoned for the reasons set forth above should be immediately reviewed in order to timely determine the advisability of submitting a processing and retention fee payment.

H. *Surcharge for Filing a Patent Application*

Filing dates are accorded to applications filed without the basic filing fee and without the oath or declaration. In such cases, a notice is mailed by Application Branch requiring at least the basic filing fee and the oath or declaration, accompanied by a surcharge (37 CFR 1.16(e)). In numerous instances, applicants fail to submit the surcharge causing the application to become abandoned. See 37 CFR 1.53(d) and MPEP §506.

XI. PATENT COPIES

A. *Price of Patent Copies*

The price of a patent copy increased from $1.00 to $1.50 on Oct. 5, 1985. The new $1.50 coupons are available, but we will accept the old ones and provide a $.50 coupon refund as appropriate.

XII. PETITIONS TO REVIVE

A. *Petitions to Revive Abandoned Applications*

Frequently, a petition to revive an abandoned application is accompanied by an unnecessary request and fee for extension of time. Our policy is set forth in MPEP 711.03(c). Specifically, a response does not require a request and fee for extension of time as a condition of revival.

Further, a petition to revive an abandoned application is often accompanied by an unnecessary terminal disclaimer. A terminal disclaimer is required only when a grantable petition based on unavoidable delay is not filed within six months of the date of abandonment (37 CFR 1.137(a) and 1.137(c)). It follows that a terminal disclaimer should not accompany a petition based on unintentional abandonment (37 CFR 1.137(b)). In these respects, analogous reasoning applies to petitions to accept late payment of the issue fee under 37 CFR 1.155 or 1.316.

Finally, when a terminal disclaimer is a necessary component of the petition, the period to be disclaimed must equal the number of months between the date of abandonment and the date a grantable petition is filed. The date of abandonment is the date the period for response has expired (see MPEP 711.04(a)). This is normally the end of the three month shortened statutory period. Moreover, the terminal disclaimer should employ the format shown in Figure 1.

XIII. PUBLIC SEARCH ROOM

A. *Loose Documents*

When photocopies are made of patented files, patent applications and patents in the Public Search Room, we have noticed that papers from files and pages of patents have been left on the copying machines. In general, some documents are not returned to files and patents are not stapled and refiled in the bundles.

XIV. POWER TO INSPECT

B. *Power of Attorney*

The Office receives letters granting power to inspect patent applications. These may only be granted by the attorney of record or inventor. Sometimes the person signing the power is not authorized to do so, causing delay until proper authorization is received. Copies of completed applications cannot be made during the pre-examination process. They can be inspected, but not pulled from the work flow to have copies made.

C. *Withdrawal of Attorney*

To expedite the handling of requests for permission to withdraw as attorney under 37 CFR §1.36, submit the request in triplicate (original and two copies) and indicate thereon the present mailing addresses of the attorney who is withdrawing and of the applicant. The examining group number should also appear on all such requests. Because the Office does not recognize law firms, each attorney of record must sign the notice of withdrawal, or the notice of withdrawal must contain a clear indication of one attorney signing on behalf of another.

A request to withdraw is effective when approved rather than when received. This is particularly important when such requests are submitted toward the end of the period for response. There should be at least thirty days between approval of withdrawal and the expiration date of a time response period so that the applicant will have sufficient time to obtain other representation or take other action. If less than thirty days remains in a running response period, a request to withdraw is normally disapproved.

It would be helpful if a request and fee, preferably an authorization to charge a deposit account, were included with a request to withdraw. Such would permit the Office to make sure, in most instances, that sufficient time remains in the period for response.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
(NAME)
Serial No.
Filed:
For:

TERMINAL DISCLAIMER

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioner, _____,
residing at _____,
represents that he is the owner of the entire interest in the above-identified application (by virtue of an assignment recorded at Reel _____, and Frame _____, filed on the _____day of _____, 19____).

Your petitioner, _____,
hereby disclaims the terminal _____months of any patent granted on the above-identified application or on any application which is entitled to the benefit of the filing date of this application under 35 U.S.C. 120. This agreement is to run with any patent so granted and to be binding upon the grantee, its successors or assigns.

IN WITNESS WHEREOF, I hereunto set my hand and seal this _____day of _____, 19____

_____
(Signature)

FIGURE 1 — Terminal Disclaimer (see IX. Petitions to Revive)

XV. SMALL ENTITY STATUS

A. *Small Entity Statements*

Verified statements claiming small entity status, where appropriate, would best be signed and submitted at the time the application oath or declaration is signed to permit filing of the statement with the application. This would reduce correspondence between attorney and client, reduce paper handling by the PTO support staff and the PTO Finance Branch, and greatly simplify the processing of subsequent papers involving fees. If small entity status is being claimed for the first time at the time of payment of the issue fee, a verified statement claiming small entity status should be submitted with the fee. See MPEP §509.03.

XVI. TRADEMARKS

A. *Application Drawings*

To avoid delays in processing new trademark applications, the drawing should have the following information in the upper left hand corner.

1. Drawing title.
2. Applicant's name and address.
3. First use date.
4. First use in interstate commerce date.
5. Goods, services or both.

B. *Archive Room*

The Trademark Archive Room contains a number of trademark records that were previously stored in the Trademark Search Library. The Archive Room is located in Crystal Plz. 2, Rm. 3C24. Records contained in this room include:

1. Bound volumes of registrations in registration number order.
2. Bound volumes of the *Trademark Official Gazette*.
3. Adversary Proceedings Index (on cards and on microfilm) by Plaintiff's Name, Plaintiff's Mark, Defendant's Name, and Defendant's Mark.
4. Pending Renewal Index.
5. Pending application receipts in serial number order.
6. Bound volumes of Registrant's Index from 1881 to 1978.
7. Bound volumes of Applicant's Index from 1980 to present.
8. Microfilm of trademark applications starting with serial number 244,754 to present.
9. Microfilm of canceled and expired trademarks.
10. Microfilm of abandoned applications in alphabetic order.
11. Microfilm of registrations in registration number order.
12. Microfilm of docket cards, old series, 1–467,235, 1970 only.
13. Microfilm of docket cards, new series, 1–427,900, 1971 to present.
14. Microfilm of marks published for opposition.
15. Microfilm of Applicant's Index, 1922–1962, 1963–1971, and 1972–1979.

C. *File Histories*

When requesting trademark file histories, the "status date" (i.e., date, abandoned) must be provided to fill the order if the file is abandoned. If not known, this information can be obtained from TRAM. The request will be returned unfilled if this date is not provided.

D. *Trademark Search Library Photocopiers*

Photocopiers and reader/printers in the Trademark Search Library are operated by "Copishare" cards. These cards can be purchased from the cashier in the Patent Public Search Room, Crystal Plz. 3, North Stack area.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 30, 1984

Re. 31,629	4,561,879	4,584,066	4,593,061
D. 275,744	4,562,794	4,584,305	4,593,092
D. 281,450	4,563,081	4,584,721	4,593,929
4,362,894	4,563,629	4,584,959	4,594,290
4,406,827	4,564,974	4,585,650	4,594,560
4,423,189	4,565,568	4,586,264	4,595,131
4,425,130	4,566,307	4,586,564	4,595,133
4,436,088	4,566,536	4,586,712	4,595,609
4,505,981	4,567,273	4,587,410	4,596,018
4,507,271	4,567,281	4,587,933	4,596,242
4,510,438	4,567,293	4,588,337	4,596,489
4,512,246	4,568,046	4,589,449	4,596,578
4,515,166	4,569,552	4,590,014	4,596,782
4,527,681	4,570,311	4,590,174	4,597,009
4,529,854	4,570,776	4,590,344	4,597,285
4,536,904	4,570,895	4,590,420	4,597,633
4,541,144	4,573,935	4,590,758	4,597,766
4,544,570	4,574,463	4,590,941	4,598,110
4,551,810	4,577,142	4,591,164	4,598,914
4,554,209	4,581,373	4,591,643	4,599,059
4,554,692	4,582,058	4,591,771	4,599,107
4,557,588	4,582,455	4,591,889	4,599,655
4,558,315	4,582,548	4,592,185	4,600,137
4,559,018	4,582,573	4,592,321	4,600,532
4,559,235	4,582,604	4,592,335	
4,561,380	4,582,791	4,592,534	
4,561,576	4,583,554	4,592,741	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Irvine: University of California, Irvine Library	(714) 856-7234
	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF August 30, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	5-21-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-08-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	4-25-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	11-09-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	7-17-84
DESIGN, GROUP 290—K. L. CAGE, Director	2-29-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	2-19-85
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-25-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during August 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,458,863 to 3,464,062, inclusive

Plant Patents ..... Numbers 2,914 to 2,917 inclusive

REEXAMINATIONS

SEPTEMBER 30, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,017,652 (575th)
PHOTOCATALYST SYSTEM AND ULTRAVIOLET LIGHT CURABLE COATING COMPOSITIONS CONTAINING THE SAME
Gerald W. Gruber, Sewickley, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Reexamination Request No. 90/000,743, Mar. 21, 1985.
Reexamination Certificate for Patent No. 4,017,652, issued Apr. 12, 1977, Ser. No. 517,572, Oct. 23, 1974.
Int. Cl.[4] B05D *3/06*; C08F *2/50*
U.S. Cl. 427—54.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

1. A photocatalyst system comprising

a. at least one aromatic ketone or aromatic aldehyde photosensitizer which

1. has a triplet energy in the range of from about 54 kilocalories per mole to about 72 kilocalories per mole, and
2. promotes polymerization bimolecular photochemical reactions of the energy donor type; and

b. at least one aromatic ketone photoinitiator which generates a radical pair by way of unimolecular homolysis resulting from photoexcitation, at least one member of said radical pair being capable of initiating addition polymerization of acrylic groups, said aromatic ketone photoinitiator being selected from the group consisting of ethyl benzoin ether, isopropyl benzoin ether, butyl benzoin ether, isobutyl benzoin ether, α, α-diethoxyacetophenone, α, α-diethoxy-α-phenylacetophenone, α, α-dimethoxy-α-phenylacetophenone, 4,4'-dicarboethoxybenzoin ethyl ether, benzoin phenyl ether, α-methylbenzoin ethyl ether, α-methylolbenzoin methyl ether, α, α, α-trichloroacetophenone, mixtures of butyl isomers of butyl benzoin ether, and mixtures thereof.

7. The ultraviolet light curable coating composition of claim **6** wherein:

a. said photosensitizer is present in an amount in the range of from about 0.01 percent to about 50 percent by weight of the binder of said coating composition;

b. said photoinitiator is present in an amount in the range of from about 0.01 percent to about 10 percent by weight of the binder of said coating composition; and

c. said resin is present in an amount in the range of from about 20 to 100 percent by weight of the binder of said coating composition.

13. A method comprising:

a. coating a substrate with an ultraviolet light curable coating composition comprising

1. at least one aromatic ketone or aromatic aldehyde photosensitizer which
   a. has a triplet energy in the range of from about 54 kilocalories per mole to about 72 kilocalories per mole, and
   b. promotes polymerization through bimolecular photochemical reactions of the energy donor type,
2. at least one aromatic ketone photoinitiator which generates a radical pair by way of unimolecular homolysis resulting from photoexcitation, at least one member of said radical pair being capable of initiating addition polymerization of acrylic groups, said aromatic ketone photoinitiator being selected from the group consisting of ethyl benzoin ether, isopropyl benzoin ether, butyl benzoin ether, isobutyl benzoin ether, α, α-diethoxyacetophenone, α, α-diethoxy-α-phenylacetophone, α, α-dimethoxy-α-phenylacetophenone, 4,4'-dicarboethoxybenzoin ethyl ether, benzoin phenyl ether, α-methylbenzoin ethyl ether, α-methylbenzoin methyl ether, α, α, α-trichloroacetophenone, mixtures of butyl isomers of butyl benzoin ether, and mixtures thereof,

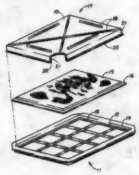
and

3. a resin having acrylic unsaturation and capable of being free radically addition polymerized by interaction with said photosensitizer and said photoinitiator upon exposure to ultraviolet light;

and

b. exposing said coated substrate to ultraviolet light to cure said coating into a hard mar and abrasion resistant film.

B1 4,314,897 (576th)
ELECTROPHORETIC GEL CONTAINER
Charles S. Monte, Orange, and Wayne S. Johnson, La Habra, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Reexamination Request No. 90/000,931, Jan. 6, 1986.
Reexamination Certificate for Patent No. 4,314,897, issued Feb. 9, 1982, Ser. No. 165,165, Jul. 1, 1980.
Int. Cl.[4] G01N *27/28*
U.S. Cl. 204—299 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2** and **6** is confirmed.

Claims **1** and **7** are cancelled.

Claims **3–5** are determined to be patentable as amended.

New claim **8** is added and determined to be patentable.

2. A device for containing a substantially planar gel layer, said gel layer having a predetermined defined perimeter, said device comprising:

a backing sheet in adherent contact with at least a portion of said gel layer, said sheet having a greater surface area than said contacted portion such that a portion of said sheet extends beyond said predetermined defined perimeter;

a base adapted to support said sheet; and

a cover, alignable with said base to secure said portion of said sheet therebetween, said cover configured so as to be spaced from said gel layer.

REISSUES

SEPTEMBER 30, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,253

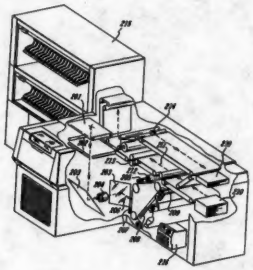
INTERACTIVE USER-MACHINE INTERFACE METHOD AND APPARATUS FOR COPIER/DUPLICATOR

Michael V. Bartulis, Redondo Beach; Edwin J. Smura, Los Alamitos; Richard P. Dunn, Van Nuys, all of Calif.; Herbert B. Bebb, Rochester, N.Y.; Anthony J. Ciuffini, Rancho Palos Verdes, and Lionel W. Mosing, Huntington Beach, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Original No. 4,332,464, dated Jun. 1, 1982, Ser. No. 189,441, Sep. 22, 1980. Application for reissue May 25, 1984, Ser. No. 614,191

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 C **9 Claims**



7. [The apparatus of claim 1 further comprising:] *A system for controlling a copying or printing system comprising:*

video means for displaying orthographic and imaginal displays to the operator,

pointing means under operator control for determining a selected point on said video means, and for generating electrical signals which are a function of the location of said point on said video means,

sensors in said system to sense the system status,

drivers in said system to drive the system to a selected status,

means for generating displays on said video means in response to said signals and the system status sensed by said sensors and for commanding said drivers in response to said pointing means electrical signals and the system status sensed by said sensors,

means for determining the average light value of the current original image,

toner means, responsive to said means for determining, for applying to the photoreceptor belt an amount of toner to produce a copy of pre-determined density, and

density adjustment means, responsive to signals produced by said pointing means, for changing said pre-determined density value.

Re. 32,254

COMPRESSIBLE MATERIAL FOLDING SHOE

John W. Daws, Clermont-Ferrand, France, and Gregory C. Brock, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Original No. 4,307,053, dated Dec. 22, 1981, Ser. No. 179,372, Aug. 18, 1980. Application for reissue Jun. 1, 1983, Ser. No. 499,969

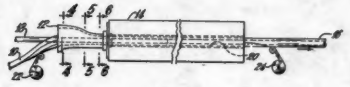
Int. Cl.[4] B29C *53/52*

U.S. Cl. 425—393 **5 Claims**

8. [The apparatus of claim 7 in which] *In apparatus for processing compressible insulation material of mineral fibers of the type in which the insulation material is passed lengthwise through a folding shoe, positioned in which is a cylindrical mandrel, the improvement comprising:*

the inlet portion of said folding shoe being adapted to fold the insulation material around said mandrel and to compress the insulation material at the botom of said mandrel;

the intermediate portion of said folding shoe being adapted to compress the portions of the insulation material at the sides of said mandrel and to cause some of the insulation material at



the sides of the mandrel to migrate upwardly toward a position above said mandrel resulting in a heavier concentration of the strip material above the top of the mandrel;

the outlet portion of said folding shoe being adapted to compress the insulation material at the top of said mandrel so that the density of the insulation material at the top of the mandrel is greater than at the sides and bottom of the mandrel; and the cross section of said inlet portion [is] *being* an ellipse.

Re. 32,255

MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 E. Lexington Pl., El Cajon, Calif. 92021

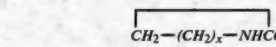
Original No. 4,394,464, dated Jul. 19, 1983, Ser. No. 390,778, Jun. 21, 1982. Application for reissue Dec. 27, 1983, Ser. No. 565,574

Int. Cl.[4] C08J *9/22, 9/24*

U.S. Cl. 521—56 **24 Claims**

14. A method of making a foamable modified polyimide which comprises the steps of:

reacting an aromatic dianhydride with an oxoimine having the general formula:



wherein "x" is an integer from 2 to 4, in a mole ratio of oxoimine to dianhydride between about 1.5:1 to about 0.05:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a reactive solvent esterifying agent to esterify said imide;

adding thereto a diamine; and

drying the resulting solution,

whereby the dried solution when heated to a temperature of from about 120° C. to about 320° C. for a period of from about 10 to about 60 minutes, forms a resilient foam having good flame resistance.

Re. 32,256

MODIFIED POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 E. Lexington Pl., El Cajon, Calif. 92021

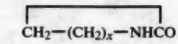
Original No. 4,394,464, dated Jul. 19, 1983, Ser. No. 565,574, Dec. 27, 1983. Division of Ser. No. 390,778, Jun. 21, 1982. Application for reissue Jun. 4, 1984, Ser. No. 616,811

Int. Cl. C08J 9/22, 9/24, 9/32

U.S. Cl. 521—180 4 Claims

14. A foamable product produced by the following process steps:

reacting an aromatic dianhydride with an oxoimine having the general formula:



wherein "x" is an integer from 2 to 4, in a mole ratio of oxoimine to dianhydride between about 1.5:1 and about 0.05:1 to produce an N-substituted aliphatic imide;

dissolving said imide in a reactive solvent esterifying agent to esterify said imide; and

drying the resulting solution,

whereby the dried solution when heated to a temperature of from about 120° C. to about 320° C. for a period of from about 10 to about 60 minutes, forms a resilient foam having good flame resistance.

PATENTS

GRANTED SEP. 30, 1986

ERRATA

For CLASS	See PATENT NO.
123–571	4,614,184
123–668	4,614,185
384–045	4,614,382
548–964	4,614,613
540–359	4,614,614
540–525	4,614,615
540–004	4,614,616
540–547	4,614,617
534–598	4,414,818
540–222	4,614,819
544–126	4,614,820
544–145	4,614,821
544–182	4,614,822
544–300	4,614,823
546–051	4,614,824
548–252	4,614,825
549–559	4,614,826
556–131	4,614,827
558–203	4,614,828
558–283	4,614,829
560–109	4,614,830
560–126	4,614,831
560–204	4,614,832
546–314	4,614,833
364–724	4,615,026
364–726	4,615,027

PATENTS

GRANTED SEPTEMBER 30, 1986

GENERAL AND MECHANICAL

4,613,991
WORK PANTS
Scott T. Grover, 621 - 11th St., Bemidji, Minn. 56601
Filed Dec. 19, 1985, Ser. No. 810,561
Int. Cl.[4] A41D *13/06, 27/20*
U.S. Cl. 2—23 **9 Claims**

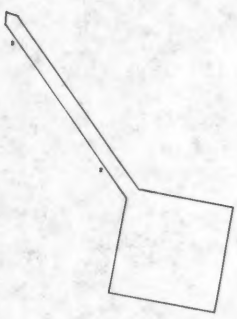
1. A pair of work pants made of washable fabric and having a waistband end, a crotch area, and a pair of leg members depending to the ankle level of a user, each leg member having a front panel, a rear panel, an inseam, an outseam, a knee level area, and an ankle end, the work pants additionally including:

(a) a releasably attached leather patch over fabric of the front panel of each leg member, each said patch covering an area extending laterally from the outseam to the inseam of the leg member and extending lengthwise from a level above the knee level area but below the crotch area downwardly along the leg member to a level at least about two-thirds of the distance between the knee level area and the ankle end, the releasable attachment of each leather patch being formed by a slide fastener having separable halves, the first half being permanantly fixed to the patch along the entire patch perimeter and the second half being permanently fixed to the fabric of the leg member along the entire perimeter of the area of coverage of the patch so as to provide a mating slide fastener relationship to the first half fixed to the patch, each said leather patch being thereby conveniently removable from the fabric of the pants to avoid laundering damage to the leather at times of washing the fabric of the pants, and

(b) a padding containment space between the leather patch and the underlying fabric of each leg member, each said containment space having removably held therewithin a padding material of layer form extending over an area substantially coextensive with the area of the patch, to thereby provide cushion protection of the knees of a user from jarring damage during drop kneeling activity regardless of whether or not the user raises the leg members of the pants for comfort purposes preliminarily to kneeling.

9. A pair of work pants made of washable fabric and having a waistband end, a crotch area, and a pair of leg members depending to the ankle level of a user, each leg member having a front panel, a rear panel, an inseam, an outseam, a knee level area, and an ankle end, the work pants additionally including a removable utility pocket centered on the outseam of at least one leg member at a location therealong approximately midway between the waistband end and the knee level area of the leg member so that when the work pants are worn by a user the utility pocket is located on the user's mid outer thigh, the utility pocket being characterized by having an inner and an outer pocket panel with an upper pocket access opening therebetween and a bottom end formed by a line of juncture between said pocket panels, the pocket panels having forward and rearward substantially vertical side edges united together, the inner said pocket panel being of greater expanse than the outer said pocket panel and extending upwardly above the pocket access opening to form a pocket access protection area for protecting the fabric of the work pants above the utility pocket access opening from abrasive wear associated with utility pocket use, said utility pocket being removably attached to the fabric of the work pants by a slide fastener having separable halves, one half of the slide fastener being permanently fixed along the perimeter of the inner pocket panel other than along the bottom end line of juncture between said pocket panels, the other half of the slide fastener being permanently fixed to the underlying washable fabric of the pants along a line for a mating relationship with the half fixed to the inner pocket panel, whereby the slide fastener assumes an inverted U-shape permitting easy unfastening and removal of the utility pocket from the fabric of the pants at times of washing the fabric, said inverted U-shaped fastener being such as to leave the bottom end of the utility pocket unattached to the underlying fabric of the pants to thereby permit greater freedom of movement of the underlying fabric relative to the utility pocket during work activity.

4,613,992
9/1 NECKTIE
Claudai L. Dabbieri, 5608 Harding Ave., Alexandria, Va. 22311
Filed May 24, 1985, Ser. No. 737,470
Int. Cl.[4] A42B *5/00*
U.S. Cl. 2—144 **7 Claims**

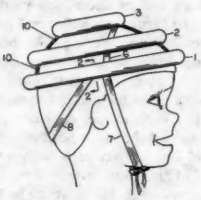


1. An article of neckware comprising an elongated rectangle neckband cut on the diagonal and formed into a tube-like member, a body member cut on the square having at least one corner point, said body member being attached together at said corner point with said tube-like member being of sufficient length to encircle the neck of a wearer more than once, said neckband tube-like member being cooperable with the body member whereby the members may be fastened around the neck of a wearer and formed into a folded, twisted and/or knotted ornamental design.

4,613,993
PROTECTIVE HEAD GEAR WITH TUBULAR RINGS
Richard J. Steele, and Maribel Steele, both of 2202 Harwell, Houston, Tex. 77023
Filed Dec. 27, 1984, Ser. No. 686,913
Int. Cl.[4] A63B *71/10*
U.S. Cl. 2—411 **1 Claim**

1. In a protective head gear a plurality of concentric rings of light, flexible material, ribbons connecting said rings in spaced relationship, and means for maintaining said rings on the head

of a user, said rings being tubular and gradually diametrically reduced, with the lowermost ring being the largest, a reinforcing strip of light, flexible material mounted on the inside of the largest of said rings and covering a seam located thereon, said



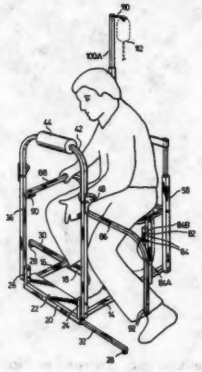
connecting ribbons comprising side ribbons and a rear ribbon wherein said side ribbons extend upwardly and forwardly from the lowermost ring to a top ring and the rear ribbon extends in a line from the top ring to the lower ring, the said maintaining means comprising a chin strap and a rear support strap.

4,613,994

COLLAPSIBLE PORTABLE ENEMA SEAT

Otto G. Oates, 106 Glen Springs Drive, Scarborough, Ontario, Canada M1W 1X8

Filed May 30, 1985, Ser. No. 739,151
Int. Cl.[4] A47K *11/06*
U.S. Cl. 4—480 **16 Claims**



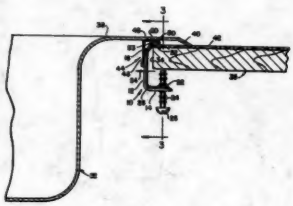
1. A portable enema seat comprising; a rigid base to extend in use substantially horizontally; a pivotable support secured at one end of the base to extend upright when in use and pivotable from the upright position to a folded lowered position on the base, having integrally connected thereto a support for sustaining the user of the enema seat when leaning on or against the pivotable support when upright; a seat supported by the base spaced from the pivotable support, the seat being pivotable from an upstanding position in use, to a position lying above the base and parallel to the base, the seat having a downwardly directed opening therethrough and said seat being discontinuous at a central rearward position remote the pivotable support; means to support a receptacle below the downwardly directed opening of the seat and a pair of arms secured to the pivotable support, one on each side of the seat, each arm pivotable laterally one at a time from a position securing the seat to the support, thereby rigidifying the structure, to a position laterally away from the side of the seat to permit the user to enter the space between the support and seat by grasping the opposite secured arm and or the support or seat for support and pulling himself/herself onto the seat; and outrigger means carried in the base of the enema seat thereby stabilizing the entire structure from tipping when in use.

4,613,995

CLAMP FOR ATTACHING A SINK BOWL TO A COUNTER TOP

James Ricke, 38 W. 594 Hilltop Dr., St. Charles, Ill. 60174

Division of Ser. No. 509,424, Jun. 30, 1983, Pat. No. 4,538,340.
This application May 20, 1985, Ser. No. 735,771
Int. Cl.[4] E03C *1/33*
U.S. Cl. 4—634 **4 Claims**



1. A clamp member and strip combination for mounting a sink bowl in an opening in a counter top, said sink bowl having an outwardly extending flange having a bottom surface and said counter top having an upper surface and a lower surface, the bottom surface of said flange extending over the upper surface of said counter top beyond said opening, said strip being formed as an angle-iron and comprising a pair of integral portions disposed at substantially a right angle to each other, a first one of said portions being attached permanently to the bottom surface of said flange of said sink bowl and having a groove disposed proximate the edge thereof, said clamp member comprising a substantially L-shaped clip made of thin metal and defining a main body portion and a base portion disposed substantially at right angles to each other, an aperture in said base portion formed with a helicoidal thread, an elongated threaded member threadably disposed in said aperture, a bent over end portion integrally formed in said main body portion and projecting above said base portion, a terminal flange portion for hooking engagement in said groove in said strip, whereby an orthogonal projection of said terminal flange portion falls between said main body portion and the axis of the threaded member, said threaded member engages the lower surface of said counter top proximate said opening and the second one of said strip portions engages the body of said clip.

4,613,996

FOLDING CHILD SUPPORT

Al L. Chase, and Ursula H. Chase, both of Box 170, Freedom, Me. 04941

Filed Jun. 26, 1984, Ser. No. 624,617
Int. Cl.[4] A47C *17/52*
U.S. Cl. 5—2 R **29 Claims**

1. A folding child support comprising:

an elongate housing comprising a back and side portions constructed and arranged for mounting on a wall or other vertical surface;

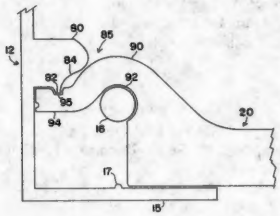
an elongate base comprising a child support surface constructed and arranged for complementary engagement with the elongated housing in a closed position;

pivotal complementary hinge coupling means formed at respective ends of the elongate housing and elongate base, said complementary hinge coupling means removeably and pivotally coupling the base and housing at said respective end for pivotal folding of the base relative to the housing between the closed position and a substantially horizontal weight bearing open position, said complemen-

tary hinge coupling means comprising curved bearing surface projections from the side portions of the housing at the hinge coupling means end and curved bearing surface receivers formed in the undersurface of the base on each side at the hinge coupling means end, said curved bearing surface receivers being open on the side and bottom for receiving the curved bearing surface projections for smooth rotational pivotal motion of the base relative to the housing during folding between the closed and open positions;

said housing and base comprising complementary supporting and holding means for self-supporting holding of the base in the substantially horizontal open position and for bearing weight on the child support surface;

said supporting and holding means comprising a first bracing surface formed as an integral part of the housing at the



hinge coupling means end of the housing, said base comprising a second bracing surface formed as an integral part of the base at the hinge coupling means end of the base, said first and second bracing surfaces being constructed and arranged for complementary interlocking bracing engagement at the hinge coupling means end of the housing and base for weight bearing self-support of the base from the hinge coupling means end in the substantially horizontal open position;

said complementary hinge coupling means and complementary bracing surfaces being constructed and arranged to cooperate for removeable and replaceable coupling and engagement of the base to the housing and for weight bearing support of the base in the open horizontal position from the cooperating hinge coupling means and bracing surfaces without the requirement of additional or external supports of the base.

4,613,997

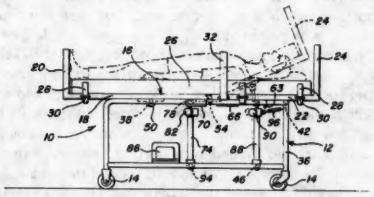
VERTICAL ACCESS CONVALESCENT BED

Oscar E. Langdale, P.O. Box 835, Belle Glade, Fla. 33430

Filed Jun. 14, 1984, Ser. No. 620,701

Int. Cl.[4] A61G *7/00*

U.S. Cl. 5—62 **12 Claims**



1. A bed structure comprising a base frame, a mattress support frame, pivotal connection means mounting the mattress support frame on the base frame for swinging movement of the support frame between a horizontal position on the base frame and a vertical position allowing a person to step onto the support frame for lowering the person into a lying position, first powered operating means connected between the base frame and the mattress support frame for moving the support frame between the vertical and horizontal positions, the mattress support frame including pivotally interconnected body and head portions, and the structure including further powered operating means on the base frame for swinging the head portion of the support frame upwardly from the horizontal position independently of the body portion of the support frame, the structure further including means for providing a releasable connection between the further powered operating means and the head portion of the mattress support frame so that the further powered operating means can be released from the support frame for movement of the support frame as a whole between the vertical and horizontal positions by the first powered operating means, and the support frame including means for holding the body and head portions in rigid alignment during movement of the support frame as a whole between the vertical and horizontal positions.

4,613,998

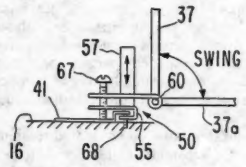
VARIABLE HEIGHT PIVOT CONNECTOR FOR CONVERTIBLE FURNITURE

Gerrit K. Drexhage, 910 Centro Way, Mill Valley, Calif. 94941

Filed Apr. 24, 1984, Ser. No. 603,488

Int. Cl.[4] A47B *83/00;* **A47C** *19/22*

U.S. Cl. 5—136 **8 Claims**



1. A convertible furniture unit comprising:

a tip-up bed including a bed frame pivotable about a pivot mechanism at a frame end between a vertical and a horizontal floor position;

a horizontally-mounted auxiliary furniture piece horizontally positioned with respect to a floor location and pivotably connected to said frame by a linkage for allowing said auxiliary furniture piece to be in a horizontal position with respect to movement of said bed frame in all positions of said bed frame at and between said vertical and horizontal floor positions; and

wherein said linkage includes means for adjusting the horizontal level of said auxiliary furniture piece with respect to said floor location;

said means for adjusting comprising:

a floor connector;

a post member extending vertically upwardly from said connector;

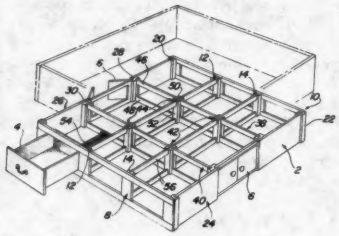
a pivotable leg connected to and extending downwardly from said horizontally-mounted auxiliary furniture piece; and

slider means pivotably connected to said leg and slidable vertically on said post member to adjust the position of said leg with respect to said connector.

4,613,999
BED PEDESTAL

Eduardo G. Franco, 268 Cattail Cir., Brea, Calif. 92621, and James E. Trimmer, Upland, Calif., assignors to Eduardo G. Franco, Brea, Calif.

Filed Feb. 16, 1984, Ser. No. 580,874
Int. Cl.[4] A47C *19/00, 19/22;* A47F *3/00*
U.S. Cl. 5—400 **14 Claims**



1. An improved waterbed pedestal frame capable of a compact shipping configuration and of being assembled without additional fasteners, comprising:

four substantially flat side panels, each side panel having at least two side connector joints on one surface thereof and two of the side panels having end connector joints at either end of their panels of a configuration to receive and retain the ends of the other side connector panels to form a frame with each side panel having its flat surface lying in a vertical plane with each side connector joint, including elongated slots, being vertically aligned opposite to another connector joint on another side panel;

a pair of central panels connected respectively to the connector joints of each pair of side panels and having intermediate connector joints, each central panel includes a pair of support posts and support rails with an opening positioned between the support rails, each support post is bifurcated into a pair of elongated rectangular wooden blocks that are also spaced apart by the support rails, each wooden block has vertically aligned upper and lower elongated slots to form the intermediate connector joints; and

a plurality of substantially flat elongated rectangular connector means of a substantially less vertical height than the flat side panels, removably mounted in the slots of the intermediate connector joints of the central panel and the side connector joints of the side panels, whereby the frame can be assembled without any additional fasteners by affixing the side panels into a square configuration and interconnecting them with the central panels and the connector members.

4,614,000
PATIENT UNDERSHEET FOR PREVENTING BED SORES

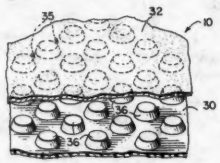
Nathan Mayer, E. Brunswick, N.J., assignor to Pacon Manufacturing Corp., Metuchen, N.J.

Filed Jun. 19, 1984, Ser. No. 622,111
Int. Cl.[4] A61G *7/04;* B32B *3/22*
U.S. Cl. 5—484 **17 Claims**

1. An undersheet apparatus for the prevention of bed sores in bedridden patients, said apparatus comprising:

a base layer having a plurality of substantially air tight bubble-like supports each having a top which is relatively smller than a bottom and cone-shaped sides, the bottoms of said bubble-like supports being connected together such that the diameter of the top of said bubble-like supports is approximately 3/16", the distance between the top and bottom of said bubble-like supports is approximately 3/16" and the diameter of the bottom of said bubble-like supports is approximately ¼", said bubble-like supports being formed from a polyethylene material having a laminated structure comprising at least two layers;

a relatively porous upper layer comprising a sheet of non-



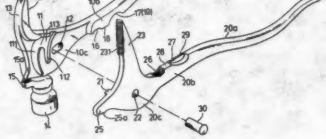
woven material, the air resistance of said upper layer being approximately 2%; and,

adhesive means for attaching said upper layer to the top of said bubble-like supports.

4,614,001
MULTIPURPOSE PLIER

Mou T. Liou, No. 33, Si Fu Road, Ta Li Hsiang, Taichung Hsieng, Taiwan

Filed Oct. 3, 1985, Ser. No. 784,257
Int. Cl.[4] B25B *7/22*
U.S. Cl. 7—137 **6 Claims**



1. A multipurpose plier comprising:

a first component part having a first handle portion, a first intermediate portion, and a first web portion, said web portion having a circular pivot hole having a pivot axis, a first nose portion extending in a direction perpendicular to said axis, and a guide piece projecting in a direction along said axis, said first nose portion being provided with a toothed surface, said intermediate portion having a first curved jaw component;

a second component part including a second handle portion, a second intermediate portion capable of tightly abutting against said first intermediate portion, and a second web portion which is pivoted to said first web portion, said second web portion having a oblong pivot hole extending longitudinally, a second nose portion longer than said first nose portion having a toothed surface to cooperate with said toothed surface of said first nose portion, and a guide recess which receives said guide piece to guide its movement so that said first web portion moves longitudinally relative to said second web portion between a first position and a second position, said second intermediate portion having a second curved jaw component to cooperate with said first jaw component, said first and second nose portions cooperating when said first web portion is in said first position, and said first and second curved jaw component cooperating when said first web portion is in said second position; and

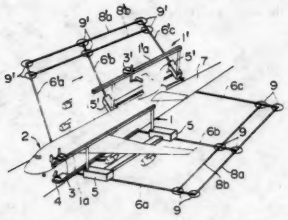
a hammer head which is one piece with and extends from said second web portion.

4,614,002

AIRCRAFT CLEANING APPARATUS

Yoshitada Hata, Matsudo; Kazuyuki Katano, Hatachi, and Isao Homma, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1985, Ser. No. 701,523
Claims priority, application Japan, Feb. 17, 1984, 59-27003
Int. Cl.[4] B64F 5/00
U.S. Cl. 15—53 A 7 Claims



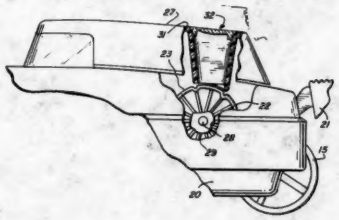
1. An aircraft cleaning apparatus for cleaning aircraft body sections along a longitudinal axis thereof, said apparatus comprising mobile means disposed on each side of said aircraft at a height which is just sufficient to pass above wing and tail surfaces of said aircraft, said mobile means carrying cleaning means for cleaning said aircraft body sections and being movable on rail means in a direction parallel to said longitudinal axis as well as in a direction substantially perpendicular thereto, said cleaning means being movable in a direction of said longitudinal axis of said aircraft.

4,614,003

PILE HEIGHT SETTING DISPLAY FOR VACUUM CLEANER

William J. Martin, Watervliet, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 1, 1985, Ser. No. 718,787
Int. Cl.[4] A47L 5/34
U.S. Cl. 15—339 19 Claims



1. In a vacuum cleaner nozzle having a housing including a top wall, adjusting means for selectively adjusting the angular disposition of the nozzle housing relative to a subjacent surface to be cleaned including a ratchet wheel having indicium thereon, and user-operated means for operating said adjusting means with concurrent repositioning of the ratchet wheel, the improvement comprising:

means for rotatably mounting said ratchet wheel fully within said housing with said indicia being selectively positioned seriatim at a viewing position spaced substantially below said top wall; and

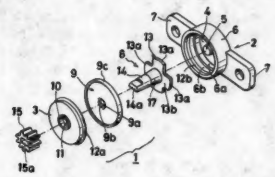
means for causing the indicia at said viewing position to be readily discernible to the user of the vacuum cleaner notwithstanding the recessing of the indicia within the housing.

4,614,004

OIL FILLED ROTARY DAMPER HAVING A SYMMETRICALLY SHAPED FLEXIBLE MEMBRANE

Tsutomu Oshida, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Nov. 1, 1984, Ser. No. 667,235
Claims priority, application Japan, Nov. 7, 1983, 58-171298[U]
Int. Cl.[4] E05F 5/02
U.S. Cl. 16—82 5 Claims



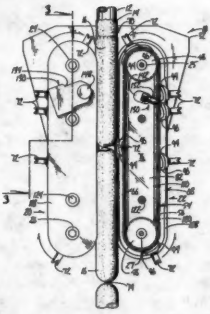
1. A rotary oil type damper, comprising: a housing; a rotor comprising a shaft having a leading end thereof extending out of said housing and provided at a basal portion thereof with a flared part radially diverged downwardly and a braking disk extending from said flared part and integrally formed with said shaft and accommodated within said housing; a centrally through apertured flexible membrane formed substantially symmetrically with respect to the observe and reverse sides thereof, inserted around said flared part of said rotor for sealing with the same, and positioned in said housing overlying but not normally contacting said braking disk; and a quantity of oil placed within said housing around said braking disk.

4,614,005

METHOD AND MEANS FOR LINKING ENCASED MEAT PRODUCTS

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Apr. 30, 1985, Ser. No. 728,807
Int. Cl.[4] A22C 11/10
U.S. Cl. 17—34 13 Claims



1. Linking apparatus for use with a product encasing machine, said machine being adapted to expel an elongaged casing filled with plastic product and being adapted to rotate said casing about the longitudinal axis thereof; said linking apparatus forming elongated link of encased produced and comprising:

a base having a forward end and a rearward end;

first and second sets of pulley means rotatably mounted on said base;

means for rotating said pulley means;

first and second belt means trained around said first and

second sets of pulley means, respectively, for rotation thereabout, each of said first and second belt means being an endless loop defining an inner track portion and an outer track portion, and said first and second belt means being spaced apart so as to define a linking station between said inner track portions through which said casing passes;

a plurality of pinching members slidably enaging said first and second belt means for movement therewith;

means for maintaining said pinching members in engagement with said first and second belt means; and

first and second control means for engaging and releasing successive pinching members on each of said first and second belt means, respectively, said pinching members being prevented from moving with said belt means when engaged by said control means and said pinching members moving with said belt means when released by said control means;

said first and second control means engaging said pinching members prior to moving into said linking station and releasing said pinching members for movement into said linking station at predetermined time intervals such that each of said pinching members on said first belt means cooperates with one of said pinching members on said second belt means while passing through said linking station so as to engage and collapse the casing therebetween and reduce the cross-sectional size thereof, said pinching members on each of said first and second belt means being spaced apart from one another while passing through said linking station such that successive pairs of cooperating pinching members form opposite ends of an elongated link;

variable timing means operatively connected to said control means for regulating the time interval between release of successive pinching members and thereby controlling the spacing between cooperating pairs of pinching members within said linking station such that the length of said links is selectively adjustable.

13. The method of linking meat products encased in an elongated cylindrical casing, comprising:

rotatably directing an elongated cylindrical casing filled with a meat emulsion into an elongated linking station between a pair of spaced apart rotatable belt means having pinching members engaging said belt means for movement therewith;

successively releasing pairs of said pinching members to pass through said linking station to engage and collapse said casing to create a reduced cross-sectional portion therein, said release being at predetermined time intervals such that successive pairs of pinching members are spaced apart while passing through said linking station so as to form opposite ends of an elongated link; and

controlling the time interval between the release of successive pairs of pinching members thereby adjusting the spacing between the pairs of pinching members passing through said linking station so as to vary the length of said links.

4,614,006

APPARATUS FOR PROCESSING CRUSTACEANS

W. Lee Lockerby, 111 Hudlow Rd., Forest City, N.C. 28043, and Alfred R. Guglielmo, 650 N. Ardenwood - Bldg. #5, Baton Rouge, La. 70806

Filed Mar. 23, 1984, Ser. No. 593,035

Int. Cl.[4] A22C *29/00*

U.S. Cl. 17—71 **14 Claims**

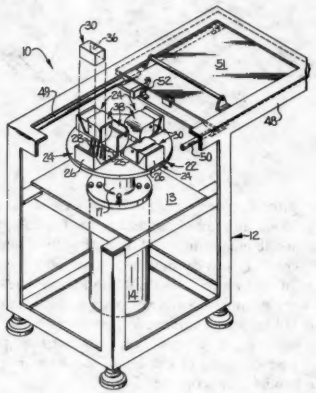
1. An apparatus for centrifugally removing meat from sliced crab bodies or other crustaceans, and comprising

a supporting frame,

a horizontally disposed disc rotatably mounted to said frame,

a plurality of individual cup-like receptacles each having an open top,

a plurality of separate fixedly mounted to said disc in an equally spaced apart arrangement about the periphery of said disc, each of said holders including means releasably supporting an individual one of said receptacles in an operative position with its open top facing radially inwardly and such that the receptacle may be vertically lifted and removed from such operative position, a body receiving area disposed radially inwardly from the associated receptacle when the receptacle is disposed in its operative position, and openwork barrier means disposed between said body receiving area and the associated receptacle, and a cover mounted to said disc for pivotal movement between an open position to permit a sliced crab body or the like to be vertically received in said body receiving area, and a closed position



enclosing said body receiving area and the open top of the associated cup-like receptacle when said receptacle is positioned in said operative position, and

drive means mounted to said supporitng frame for rapidly accelerating said disc to a predetermined rotational speed and so as to be adapted to extract meat from sliced crab bodies or the like which are positioned in said body receiving area of said holders and in contact with the radially inward side of said openwork barrier means, and such that the extracted meat passes through said barrier means and is received in the removable receptacles.

4,614,007

CLAMPING MEANS FOR A STRAP

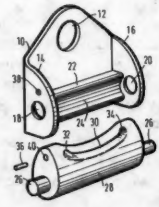
Robert F. Else, Nr. Southampton, United Kingdom, assignor to Britax (Wingard) Limited, Chichester, England

Filed Aug. 30, 1985, Ser. No. 771,254

Claims priority, application United Kingdom, Oct. 2, 1984, 8424853

Int. Cl.[4] F16G *11/00*

U.S. Cl. 24—136 K **10 Claims**



1. Clamping means for a strap comprising a support member having a concave surface, a guide member having a convex

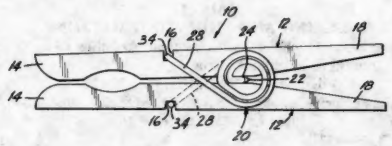
surface and blocking means for controlling movement of the guide member relative to the support member, the guide member being pivotally mounted on the support member for angular movement between a first position in which the concave and convex surfaces are spaced apart by a distance greater than the uncompressed thickness of the strap and a second position in which the concave and convex surfaces are spaced apart by a distance less than the uncompressed thickness of the strap, the guide member further comprising a lobe so positioned in relation to the convex surface that the length of the path of the strap extending from a first predetermined location, round the lobe and between the concave and convex surfaces, to a second predetermined location decreases as the guide member pivots from its first position to its second position and the blocking means being arranged to retain the guide member in its first position until tension in the strap exceeds a predetermined value.

4,614,008

SPRING BIASED CLOTHES PIN

Fred Brill, and George Spector, both of 233 Broadway, Rm. 3615, New York, N.Y. 10007

Filed Sep. 19, 1985, Ser. No. 777,588
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—501 **6 Claims**



1. An improved clothes pin of the type having a pair of complimental elongated body members, each body member having a front jaw with a slot therein and a rear outwardly inclined finger grip and a spring for resiliently pressing said jaws together toward a closed position, said spring having a common fulcrum at the base of said finger grips about which said body members may be rocked for opening said jaws manually, wherein the improvement comprises said spring including:

(a) an elongated bar forming said common fulcrum;

(b) a pair of spiral torsion portions, each said torsion portion extending transversely from one end of said elongated bar at side of said body members; and

(c) a pair of arms, each said arm extending from one of said torsion portions to engage within said slot so that said arms will embrace said jaws for supplying increased tension to said body members and preventing said body members from separating when using said improved clothes pin.

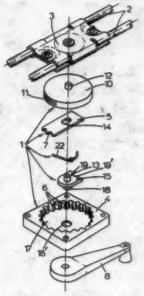
4,614,009

LOCKING MEMBER FOR AN OPEN ROOF CONSTRUCTION FOR A VEHICLE

Robert T. Boots, Haarlem, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., Haarlem, Netherlands

Filed Jan. 24, 1985, Ser. No. 694,283
Claims priority, application Netherlands, Jan. 25, 1984, 8400228
Int. Cl.[4] F16C *1/10*
U.S. Cl. 74—501R **11 Claims**

1. Locking member for an open roof construction for a vehicle, operated by means of at least one push-pull cable, which is displaceable by means of a driving wheel, which is rotatable in two opposite directions, while the locking member at least substantially prevents a rotation of the driving wheel by the push-pull cable, which locking member comprises two cooperating locking parts, the first one of these locking parts being stationary and the second locking part, when at rest, being maintained in the locked position, whilst this second locking part can first be brought from its locked position into its released position with respect to the stationary locking part



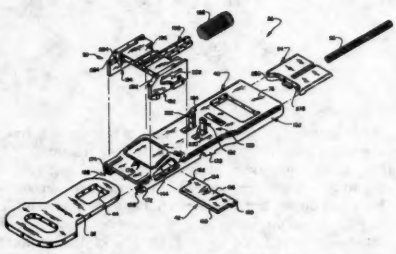
by means of an actuating member and can thereafter be rotated in the two opposite directions, which rotation is followed by the driving wheel, both locking parts comprising teeth or the like, which are in engagement with each other in the locked position.

4,614,010

SAFETY BELT BUCKLE

Keith D. Charlton, Midland; Anthony S. Bracnik, Penetanguishene, and Kenneth M. Forget, Lafontaine, all of Canada, assignors to TRW Inc., Cleveland, Ohio

Filed Jun. 3, 1985, Ser. No. 740,725
Int. Cl.[4] A44B *11/25*
U.S. Cl. 24—639 **36 Claims**



1. An apparatus for use in either a top release buckle having a manually movable actuator pad in an upper portion of the buckle or an end release buckle having a manually movable actuator slide in an end portion of the end release buckle, said apparatus comprising:

a base,

a latch bar disposed on said base and movable between engaged and disengaged conditions in which said latch bar is effective to hold or release a tongue connected with a safety belt,

slide means movable along said base for moving said latch bar between the engaged and disengaged conditions, said slide means including actuator surface means engageable by the actuator pad when said apparatus is used in a top release buckle and engageable by the actuator slide when said apparatus is used in an end release buckle, and

spring means for urging said slide means toward a first position in which said latch bar is in the engaged condition,

said slide means being movable along said base against the influence of said spring means from a first position to a second position to move said latch bar from the engaged condition to the disengaged condition under the influence of force applied against said actuator surface means by the actuator pad when said apparatus is used in a top release buckle and by the actuator slide when said apparatus is used in an end release buckle.

4,614,011

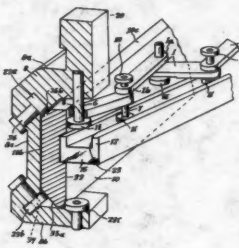
WEB STRETCHING APPARATUS

Donald C. Nicholas, Manningtree, and Gordon C. R. Smith, Colchester, both of England, assignors to BXL Plastics Limited, United Kingdom

Continuation of Ser. No. 751,810, Jul. 5, 1985, abandoned, which is a continuation of Ser. No. 679,388, Dec. 7, 1984, abandoned, which is a continuation of Ser. No. 558,355, Dec. 5, 1983, abandoned, which is a continuation of Ser. No. 490,474, May 2, 1983, abandoned, which is a continuation of Ser. No. 286,844, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 101,445, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 21,313, Mar. 16, 1979, abandoned, which is a continuation of Ser. No. 908,370, May 22, 1978, abandoned, which is a continuation of Ser. No. 822,815, Aug. 8, 1977, abandoned, which is a continuation of Ser. No. 559,587, Mar. 18, 1975, abandoned, which is a continuation of Ser. No. 369,609, Jun. 13, 1973, abandoned. This application Nov. 26, 1985, Ser. No. 801,400

Int. Cl.[4] D06C *3/04*

U.S. Cl. 26—73 **5 Claims**



1. Apparatus for biaxially stretching a thin continuous web of material continuously, the apparatus comprising:

(a) a pair of continuous primary rails each having an inner longitudinal surface, an outer longitudinal surface with bevelled upper and lower portions, and upper and lower edges; the rails defining a pair of opposed tracks which are mirror images of one another, the tracks having upstream converging portions, upstream parallel portions, diverging portions and downstream parallel portions;

(b) secondary guide means formed of discontinuous guide members laterally positioned with respect to and coextensive with the primary rails over at least the upstream converging portions and the diverging portions of the tracks defined by the primary rails;

(c) lead-in and lead-out sprockets having peripheral teeth thereon;

(d) a continuous, articulated chain formed of a plurality of links and entrained around the sprockets, the links having leading and trailing ends which are pivoted on parallel axles that extend both below and above the links;

(e) first and second rollers mounted on the axles below the links for engaging the primary rails and the discontinuous guide members in alternative fashion, with the first rollers being disposed above the second rollers and engaging the inner longitudinal surfaces of the rails continuously and the second rollers being disposed below the first rollers and engaging the discontinuous guide members;

(f) third rollers mounted on the axles having the second rollers thereon, the third rollers being positioned above the links and being in planar alignment with the teeth of the lead-out and lead-in drive sprockets for engagement by the drive sprockets to advance the chain;

(g) a plurality of carriages mounted on the primary rails, each carriage being generally C-shaped in configuration with upper and lower legs joined by a bight; the upper and lower legs overlying and extending beyond the upper and lower edges of the rails, respectively, and the bight extending over the outer longitudinal surfces of the rails; the carriages including a pedestal for mounting gripping means for gripping the web of material; the gripping means gripping the web of material at positions in vertical alignment with the rails upon which the carriages are mounted;

(h) means for mounting the carriages on the axles which have the first rollers thereon, and

(i) roller means on each of the carriages for engaging the rail at the bevelled upper portion of the outer longitudinal surface adjacent to the upper edge of the rail; the bevelled lower portion of the outer longitudinal surface adjacent the lower edge, and at the inner surface of the rail wherein each carriage is stably mounted on one of the rails with spacing between each carriage and adjacent carriages determined by the angle between the links.

4,614,012

DRILLING AND MOUNTING MACHINE

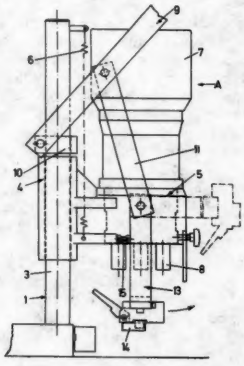
Dietmar Blum, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Mar. 7, 1985, Ser. No. 709,283

Claims priority, application Austria, Mar. 28, 1984, 1036/84

Int. Cl.[4] B23P *23/04, 19/04*

U.S. Cl. 29—33 K **4 Claims**



1. A drilling and mounting machine for drilling fastening holes for furniture fittings, for example hinges, in furniture parts, and for mounting the furniture fittings in the thus drilled furniture parts, said machine comprising:

a frame;

a housing supporting a drilling mechanism including a drill gear, drill sleeves and a driving motor, said housing being movably mounted on said frame;

feed means, pivotally connected to said housing at at least one point of linkage, for moving said housing with respect to said frame; and

an inserting member, pivotally mounted at said point of linkage between an inserting position and a withdrawn position;

whereby, with said inserting member in said withdrawn position thereof operation of said feed means enables

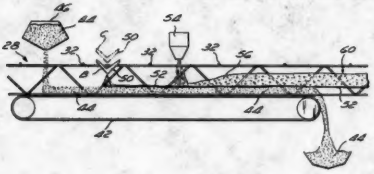
drilling of holes in a furniture part, and thereafter with said inserting member in said inserting position thereof operation of said feed means enables insertion of a furniture fitting into the thus drilled furniture part without application of insertion pressures to said drilling mechanism.

4,614,013

METHOD OF FORMING A REINFORCED STRUCTURAL BUILDING PANEL

David Stevenson, 15833 El Soneto Dr., Whittier, Calif. 90603

Filed Feb. 21, 1984, Ser. No. 582,181
Int. Cl.[4] B23K *9/12*; E04C *2/26*
U.S. Cl. 29—155 R **12 Claims**



1. A method for forming a structural building panel, comprising the steps of

(a) providing a plurality of discrete welded wire trusses, each said truss having two parallel base runner wires, an apex runner wire parallel to and equidistant from said base wires and spaced outside the plane of said base wires, and a plurality of strut wires joining said base wire to said apex wires to form a truss having a "V"-shape in longitudinal cross section;

(b) arranging a plurality of said trusses into a parallel, spaced-apart relationship so that some of the runner wires fall into a first plane and the remaining runner wires fall into a parallel second plane;

(c) extending a cross-wire transversely across the runner wires in the first plane and welding said cross wire to said runner wires between a plurality of electrode pairs, each electrode pair moving only perpendicularly to said first plane and into and out of engagement with the wires to be welded;

(d) welding a transverse cross wire to the runner wires in the second plane in the same manner as in step (c) and advancing the trusses longitudinally;

(e) repeating steps (c) and (d) until the trusses have been welded into a three-dimensional wire matrix panel having a first side and a second side;

(f) supporting the first side of the matrix panel on a conveyor belt;

(g) introducing a sand-like granular material into the matrix on the belt to form a uniform layer inside the matrix;

(h) introducing a layer of viscous liquid material onto the sand-like granular material;

(i) placing a layer of foaming liquid organic resin material on the viscous material; and

(j) expanding and solidifying said foam material.

4,614,014

METHOD OF MANUFACTURING A VALVE SLEEVE

Donald E. Ferguson, Mentor, Ohio, assignor to Buckeye International, Inc., Columbus, Ohio

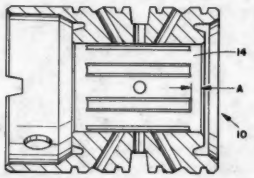
Filed Oct. 11, 1984, Ser. No. 659,786
Int. Cl.[4] B21D *53/00*
U.S. Cl. 29—157.1 R **4 Claims**

1. A method of manufacture of a cylindrical valve sleeve including the steps of:

(a) providing a cylindrical valve having an inner wall, an outer wall and an end shoulder therebetween;

(b) machining said shoulder to provide a circumferential groove disposed radially outwardly from the inner wall to define a swedgable shoulder area sized for axial and radial deformation to form a radially-inwardly displaced protrusion;

(c) broaching said inner wall to provide a plurality of open-ended longitudinal slots radially spaced about said inner wall; and,



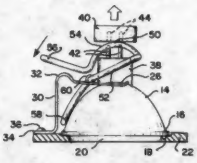
(d) swedging said shoulder area at preselected spaced positions contiguous to end portions of said longitudinal slots to deform said positions axially and radially-inwardly into said slot end portions to form a plurality of spaced and discontinuous protrusions in association with said slots whereby said slot end portions are substantially closed.

4,614,015

DEVICE FOR RETAINING/EJECTING A LAMP FROM A SOCKET AND FRAME

Arthur T. Nagare; Wolfgang Mueller; Thomas J. Fendya, and Joseph T. Sestak, all of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Oct. 2, 1985, Ser. No. 783,500
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—239 **6 Claims**



1. A device for ejecting a lamp from a socket, wherein. said lamp has associated therewith a rim mountable on a frame, comprising:

means for stabilizing said lamp in said frame; and

an ejection member adjacent to said lamp comprising;

means for ejecting said socket from said lamp;

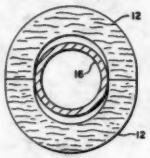
means for ejecting said lamp from said stabilizing means; and

means for sequentially actuating said socket ejecting means and said lamp ejecting means in one stroke wherein such stroke moves said sequential actuating means from a rest position in which said stabilizing means is operative, through a transition position in which said socket ejecting means and said stabilizing means are operative, to a final position in which said lamp ejecting means is operative.

4,614,016
METHOD OF INSULATING PIPE WITH THERMO-LOCK INTERFIT INSULATION

Donald R. Laing, 32 Northview Rd., Unit #4, Nepean, Ontario, Canada (K2E 7E4); Michael R. Sweny, 70 West River Dr., Manotick, Ontario, Canada (K0A 2N0), and John P. Giard, 32 Sherway Dr., Nepean, Ontario, Canada

Filed Aug. 22, 1985, Ser. No. 768,251
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—412 **2 Claims**

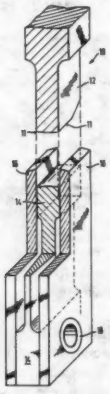


1. The method of insulating a pipe of a given outer diameter, including the steps of cutting a pair of substantially semicylindrical pieces out of a fiberboard insulating board, the pieces being cut such that each leg of each piece is approximately five percent longer than necessary, assembling the pieces on a pipe so as to cover the entire periphery of the pipe, and clamping the two pieces together so that the fibers in the two pieces are compressed.

4,614,017
DEVICE FOR JOINING METAL SHEETS BY A RIVETTING-TYPE METHOD

Gerd-Jürgen Eckold, St. Andreasburg, and Hans Maab, Bad Lauterberg, both of Fed. Rep. of Germany, assignors to Walter Eckold GmbH & Co. KG, St. Andreasberg, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,095
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 8131528[U]; Apr. 19, 1982, 8207848[U]
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—243.53 **24 Claims**

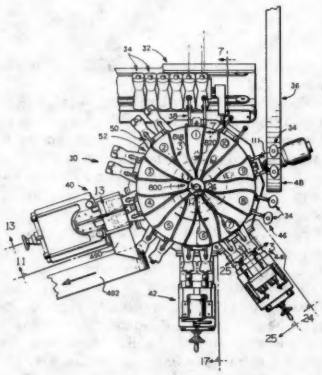


1. In a device for joining two metal sheets by inserting the same face-to-face between a female die and a male die which can be moved in the direction if the female die, and in which the male die comprises a punch provided with cutting edges and the female die comprises counter-edges and an anvil which is set back behind the counter-edges and on which the material forced between the counter-edges by the punch is pressed to flow while the counter-edges yield laterally and, after the joint has been lifted out of the female die, are returned again into their cutting position by means of spring tension; characterized in that said counter-edges are formed by the free edges of leaf springs which extend generally parallel to the direction of movement of the male die, said leaf springs having uniform thickness in the lateral yielding direction and are secured rigidly relative to said anvil to prohibit vertical sliding movement therebetween and so as to be in flat, mutual contact therewith at the area of securance, said leaf springs withstanding the cutting force of said punch in the direction of its movement toward said anvil and are capable of flexing between said counter-edges and said rigid securance in a direction orthogonal to said direction of punch movement.

4,614,018
ARTICLE TRIMMING APPARATUS

Thomas J. Krall, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 29, 1984, Ser. No. 594,599
Int. Cl.[4] B23B *3/04, 5/14*
U.S. Cl. 29—33 J **57 Claims**



1. An apparatus for trimming a hollow plastic article having flash and a finish for receiving a closure which comprises:

a base,

a plurality of stations about said base including

a load station associated with said base,

an unload station circumferentially spaced from said load station,

a turret rotatably mounted on said base about an axis with respect to said base,

means for intermittently rotating said turret,

a plurality of vacuum heads for picking up the articles,

means for selectively applying vacuum to said vacuum heads,

means for mounting each said vacuum head on said turret, in circumferentially spaced relation for intermittent rotation with respect to said base, means for moving each said vacuum head for picking up and engaging an article at said load station, releasing an article at said unload station, and continuously engaging the same article throughout all stations between said load and unload stations unless such same article is rejected and released prior to said unload station,

a loader apparatus at said load station constructed and arranged to present articles for picking by vacuum heads,

a deflash station associated with said base, circumferentially spaced between said load and unload stations,

a deflasher apparatus at said deflasher station including opposed dies for holding a hollow plastic article and

means for removing flash from an article while such article is being held by said dies and is continuously engaged by an associated vacuum head, and

a facing station associated with said base, circumferentially spaced between said load and unload stations,

a facing apparatus at said facing station including nests for clamping a hollow plastic article and including a facer tool for removing material from a finish of an article to form an opening for receiving a closure while such article is being clamped by said nests and continuously engaged by an associated vacuum head.

4,614,019

FILM LOADING METHOD AND APPARATUS

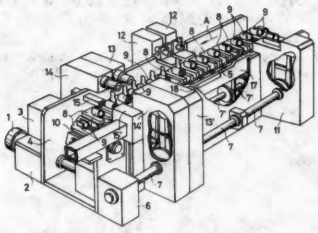
Shigehisa Shimizu; Chiaki Suzuki; Kazumasa Harada, and Tomohisa Maeda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1984, Ser. No. 576,649

Claims priority, application Japan, Feb. 3, 1983, 58-16640

Int. Cl.⁴ B23P *11/02, 19/00*

U.S. Cl. 29—450 **6 Claims**



1. A film loading method, comprising the steps of:

A. supplying a shell plate, a spool and caps to a shell plate temporary shaping station, a separate winding station and a separate supplying station, respectively, and, simultaneously

B. (1) holding, at said shell plate temporary shaping station, said shell plate with a shell plate chuck in such a manner that said shell plate is half open;

(2) winding, at said winding station, a film on said spool and holding said spool;

(3) inserting said spool on which said film has been wound into said half-open shell plate;

(4) shaping said shell plate as required at said shaping station; and

(5) fitting, at said cap supplying station, said caps on both open ends of said shell plate.

4,614,020

MECHANISM AND METHOD FOR AUTOMATICALLY CHANGING TOOLS

Shigeki Kawada, Hino, and Yoshiki Fujioka, Higashiyamato, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP82/00369, § 371 Date May 4, 1983, § 102(e) Date May 4, 1983, PCT Pub. No. WO83/01029, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 14, 1982, Ser. No. 498,209

Claims priority, application Japan, Sep. 14, 1981, 56-145329

The portion of the term of this patent subsequent to Sep. 9, 2003, has been disclaimed.

Int. Cl.⁴ B23Q *3/157*

U.S. Cl. 29—568 **10 Claims**

1. An automatic tool changing apparatus, comprising:

a spindle mechanism having at least a spindle and a first gear attached to and rotatable with the spindle;

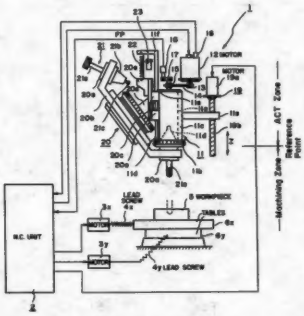
a spindle motor for rotating the spindle;

a tool magazine having at least a storage unit for storing a plurality of tools, a second gear attached to and rotatable with the storage unit and meshable with the first gear;

a slider slidably mounted on the spindle mechanism;

a Z-axis motor for moving the spindle mechanism in the direction of a Z-axis while the spindle mechanism travels on said slider;

a constraining member for constraining the tool magazine against movement thereof in the direction of the Z-axis, during a machining operation the first and second gears are brought out of mesh with each other and the spindle is



rotated by the spindle motor at a prescribed speed to enable a tool mounted on the spindle to machine a workpiece, and during a tool changing operation the first and second gears are held in mesh with each other and the spindle motor is rotated to position the tool magazine to index to a desired new tool; and

spindle fixed position stopping control means, operatively connected to said spindle motor, for stopping the spindle at a fixed position after the machining operation and before the tool changing operation.

4,614,021

PILLAR VIA PROCESS

Terry S. Hulseweh, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1985, Ser. No. 717,343

Int. Cl.⁴ H01L *21/312*

U.S. Cl. 29—590 **22 Claims**

1. A process for interconnecting multiple conductor layers on electronic circuits, comprising:

providing a substrate having a principal surface; forming a first conductor layer on said principal surface;

forming a conductive etch-stop layer on said first conductor layer;

forming on said etch-stop layer a second conductor layer of a material which is selectively removeable with respect to said etch stop layer;

providing a first masking layer on said second conductor layer having an open region above an exposed first portion of said second conductor layer and a mask region above a covered second portion of said second conductor layer;

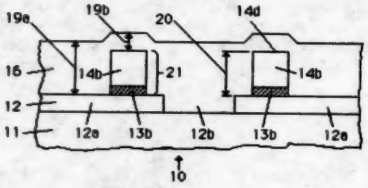
selectively removing said first portion of said second conductor layer to expose a first portion of said etch-stop layer under said open region leaving said second portion of said second conductor layer; removing said first portion of said etch-stop layer to expose a first portion of said first conductor layer under said open region;

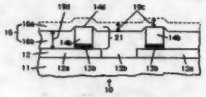
removing said mask region;

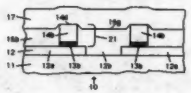
covering any exposed portions of said principal surface, said first conductor layer and said second conductor layer with a dielectric planarizing layer having a first thickness above said first portion of said first conductor layer and a second thickness above said second portion of said second conduc-

tor layer and wherein said first thickness is greater than said second thickness;

removing from said dielectric planarizing layer a first part having at least said second thickness so as to expose said second portion of said second conductor layer, leaving a







second part of said dielectric planarizing layer covering said first portion of said first conductor layer; and

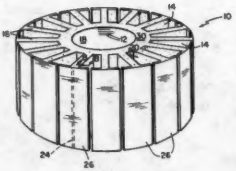
forming a third conductor layer in contact with said second portion of said second conductor layer and said second part of said dielectric planarizing layer.

4,614,022

METHOD FOR FORMING MULTI-LAMINATE CORE ASSEMBLY

Kenneth Bibby, Norwood, and Frank R. Ring, Jr., Walpole, both of Mass., assignors to Applied Plastics Co., Inc., Norwood, Mass.

Filed May 30, 1985, Ser. No. 739,558
Int. Cl.[4] H02K *15/00, 15/02;* **B23P** *17/00*
U.S. Cl. 29—596 **4 Claims**



1. A method of forming a laminate core comprising a multiplicity of magnetic plates arrayed in face-to-face relation in a stack having opposite end surfaces, a generally circumferential outer side surface, and an axial bore sized and adapted for receiving a rotor, at least one of said outer side and bore defining surfaces also defining a multiplicity of notches sized and configured for receiving windings,

said method comprising:

assembling said plates in said stacked relationship;

applying at least one strip of adhesive material generally axially along the outer surface of the assembled stack in an area not defining a said notch;

allowing said adhesive to dry in a manner to hold said plates assembled during handling at least during application of bonding material prior to a curing step;

thereafter applying, in powdered form, a bonding material in the form of a layer of dry particles of a thermoset synthetic resin to the surfaces of the assembly of plates defining said notches, said particles forming a layer covering the side surfaces of the discrete plates, and extending across spaces between adjacent plates in said stack, particles of said resin entering the spaces between said plates; and

heating said stack to a temperature at least sufficient to cure said synthetic resin to form an integral bonding layer upon the surfaces of the stack defining said notches, and extending into the gaps between the plates of said stack;

the cured thermoset resin forming said plates into a substantially rigid unit not subject to movement between layers during handling or at elevated temperatures of use; and,

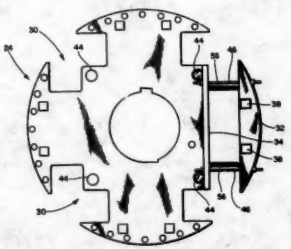
after said resin is cured sufficiently to hold said plates assembled, removing at least a portion of said adhesive.

4,614,023

FIELD COIL FOR DYNAMOELECTRIC MACHINE

Hollis D. Sisk, Chesterfield, Mo., assignor to Century Electric, Inc., St. Louis, Mo.

Division of Ser. No. 352,447, Feb. 25, 1982, abandoned. This application Dec. 1, 1983, Ser. No. 547,576
Int. Cl.[4] H02K *15/095*
U.S. Cl. 29—598 **13 Claims**



1. A method for forming a main field coil for a dynamoelectric machine, the method comprising the steps of:

providing a support having a predetermined geometry,

winding a solid strand wire about said support,

placing at least one structurally rigid removable means on said support and across said wire after winding a first predetermined amount of wire, said structurally rigid removable means having a notched portion therein,

precision winding a second predetermined amount of wire about said support and the notched portion of said removable means to form at least one coil head air vent, and

removing said structurally rigid removable means leaving said air vent.

4,614,024

METHOD OF MANUFACTURING HEAT SENSITIVE CABLE

Bayard C. Davis, Lombard, Ill., assignor to XCO International, Inc., Elgin, Ill.

Division of Ser. No. 317,631, Nov. 2, 1981, Pat. No. 4,491,822. This application Aug. 29, 1984, Ser. No. 646,133
Int. Cl.[4] H01C *7/02*
U.S. Cl. 29—612 **18 Claims**

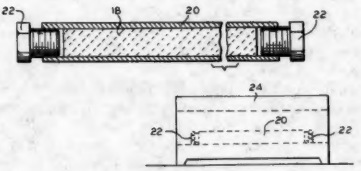
1. A method of manufacturing a heat sensitive cable operable over a temperature range of between approximately −20° F. and 1650° F., comprising the steps of:

providing manganese dioxide to be converted from a con-

ductor into an insulation material having an insulation resistance within said temperature range variable with temperature in the range of between approximately 100 and 50,000 ohms;

heating said manganese dioxide in a vacuum furnace at a temperature of approximately 1650° F. to convert said manganese dioxide to said insulation material having said variable insulation resistance within said temperature range;

advancing at least one thermoelectric conductor means from a starting position through a given region lying generally forwardly and axially of said starting position;



advancing a strip of flat metal material past tubular sheath forming means so as to form a tubular sheath therefrom in a position surrounding said given region;

concurrently depositing a sufficient amount of said insulation material within the formed sheath to fill said tubular formed sheath; and

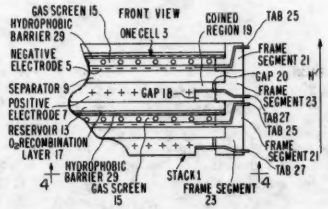
advancing said sheath, said insulation material contained therein and said conductor means through means for reducing the diameter of said sheath and applying tension to said conductor means to compact said insulation material and permanently position said conductor means therein.

4,614,025

METHOD FOR MAKING A LIGHTWEIGHT BIPOLAR METAL-GAS BATTERY

Gerrit vanOmmering, San Francisco, and Charles W. Koehler, Fremont, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 26, 1984, Ser. No. 686,355
Int. Cl.⁴ H01M 6/00
U.S. Cl. 29—623.1 **9 Claims**



1. A method for constructing a multi-cell bipolar metal-gas battery stack, in which a metal and a primary gas are reactants, said method comprising the steps of:

fabricating a dielectric frame generally in the shape of a hollowed-out prism having inner width and inner length dimensions defining the common width and the common length of each stacked cell;

placing, within the hollowed-out portion of the frame, substantially planar solid components constituting several substantially identical stacked cells, wherein each cell comprises positive and negative electrodes separated by an electrolyte impervious layer; and

electrically series-connecting adjacent cells by means of forming, outside the frame, electrical connections between oppositely polarized electrodes from adjacent pairs of cells;

wherein the frame confines, within each cell, electrolyte and secondary gas generated by the positive electrode of said cell; and

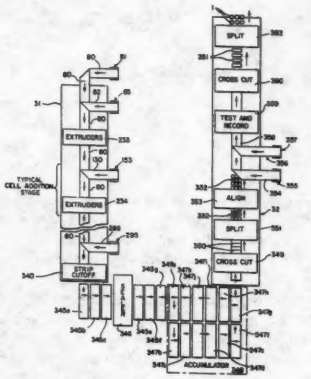
all of the cells have equal access to a common supply of the primary gas.

4,614,026

PROCESS FOR MAKING LAMINAR BATTERIES

Paul A. Plasse, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 295,269, Aug. 24, 1981, Pat. No. 4,539,275.
This application Jun. 27, 1985, Ser. No. 749,412
Int. Cl.⁴ H01M 6/00
U.S. Cl. 29—623.3 **6 Claims**



1. The process of making laminar cells, comprising the steps of perforating a first elongated web of liquid impervious, electrically nonconducting thermoplastic material with a spaced rectangular array of apertures arranged in rows across the direction of elongation of said web and in columns parallel to the direction of elongation of said web, adding patches of electrically conductive material each comprising a sheet of conductive plastic adhered to a coterminous layer of electrode particles in a binder to a first side of said first web with the conductive plastic side of each patch in contact with the borders of a different one of said apertures to form a spaced rectangular array of said patches on said first web, adhering a piece of separator material to said first web over each of said patches on said first side of said first web, placing spaced elongated strips of metal on said first web on a second side of said first web opposite said first side, said metal strips being aligned with and each overlying a different one of said columns, laminating said strips to contiguous portions of said first web and to portions of the conductive plastic sides of said patches within said apertures, advancing said first web into registry with a second web of nonconducting material while advancing said second web at constant speed, severing strips from said first web between said rows and transferring said severed strips to said second web in spaced parallel rows each perpendicular to the direction of advance of said second web, extruding deposits of slurry electrode material onto each of said pieces of separator material, placing a piece of conductive terminal material comprising a layer of metal adhered to a layer of conductive plastic over each deposit of slurry electrode material with the conductive plastic layer of each terminal piece in contact with the slurry, each piece of said terminal material having borders extending beyond the borders of said slurry deposits and the underlying electrode patches and overlying confronting re-

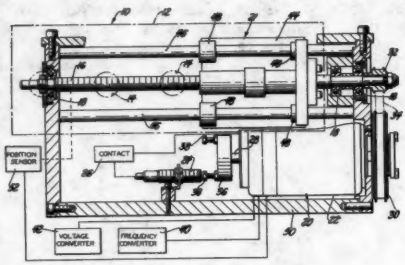
gions of said first web but spaced from each adjacent terminal piece, and adhering the borders of said terminal pieces to said first web to form sealed cells.

4,614,027

ASSEMBLING MACHINE WITH DRIVE MECHANISM FOR FEED ASSEMBLY

Duke Morrow, Plymouth, Mich., assignor to Multi Feed, Inc., Northville, Mich.

Filed May 7, 1984, Ser. No. 608,132
Int. Cl.[4] B23P *21/00, 19/00*
U.S. Cl. 29—707 **12 Claims**



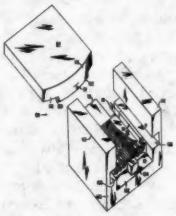
1. An assembling machine combination comprising: a feed line; a part assembling machine; and a part feed assembly (**10**) for feeding parts from the feed line to the assembling machine, said part feed assembly (**10**) including a multiple part escapement (**12**) including a plurality of linearly aligned openings (**14**) for sequentially receiving a part from the feed line, a ball screw shaft (**16**), drive means (**20**) operatively connected to said ball screw shaft (**16**) for incremental rotation of said ball screw shaft (**16**), driven support means (**21**) threadably engaging said ball screw shaft (**16**) for incremental linear movement axially along said ball screw shaft (**16**) and for supporting said escapement (**12**) thereon to advance said openings (**14**) in said escapement (**12**) from the feed line to the assembling machine where the parts are released from said openings (**14**).

4,614,028

ELECTRICAL ASSEMBLY AND METHOD FOR ARRANGING A PLURALITY OF ELECTRICAL CONDUCTORS IN A PATTERN

Donald S. Rich, Long Valley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Division of Ser. No. 359,143, Mar. 17, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,849
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—749 **10 Claims**



1. Apparatus for assembling the conductors of a flat multiconductor cable to a connector body having opposed upper and lower surfaces defining a body height and having a plurality of spaced conductor retention channels extending into said body through said upper surface, said apparatus comprising:

a base having a floor surface for receipt thereon of said lower surface of said connector body;

a pair of upstanding, spaced sidewalls on said base and extending therefrom;

a movable ram having a conductor engaging surface thereon movably supported by said upstanding sidewalls in a manner such that said conductor engaging surface traverses a path substantially parallel to said floor surface, said ram being supported such that during the course of movement, a spacing is defined between said conductor engaging surface and said floor surface that is not greater than the body height of said body connector; and

means for holding a connector body in a fixed position relative to said base during the course of movement of said ram,

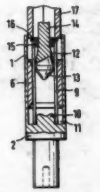
whereby a connector body placed on said floor surface with conductors of a flat multiconductor cable disposed initially over the upper surface of said connector body may have such conductors forcedly assembled into said connector body channels by the movement of said conductor engaging surface of said movable ram, the conductor engagement surface being in an interference relation with the upper surface of said connector body during the course of movement of said ram.

4,614,029

METHOD OF MANUFACTURING CONTACT SPRING SOCKETS

Gerhard Neumann, Waldkraiburg, and Hans Ramisch, Mühldorf, both of Fed. Rep. of Germany, assignors to Otto Dunkel GmbH Fabrik fur Elektrontechnische Gerate, Muhldorf am Inn, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,446
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1984, 3412877
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—882 **5 Claims**



1. Method of manufacturing contact spring sockets with a plurality of radially inward bowed contact springs clamped at one end in an approximately cylindrical socket body, formed by a thin-walled deformable sleeve, wherein straight contact springs, formed by sections of a contact spring wire, are introduced into the socket body from one socket end, wherein the fastening in the socket body of the contact springs at their front ends in an aligned state relative to each other, to a central annular head at the front end of a line connector projecting into the socket body is achieved by means of deformation of the socket material, and wherein the free ends of the contact springs are brought into supporting abutment on an annulus at the pin insertion end, which is associated with an assembly mandrel passing through it, which is co-axially introduced into the socket body during manufacture, and finally withdrawn from it, characterized by the following method steps:

(a) introduction into the middle region of the socket body (**1**) of an insert ring fitting adjacent the interior wall of the socket and projecting with its end edges into the socket interior

(b) introduction into the socket body of the contact springs, whereby they lie adjacent the insert ring and with their

front edges they extend into the co-axial annular gap between the interior wall of the socket and the central head of the line connector which projects into the interior of the socket,

(c) introduction into the socket body of the mandrel, which is conically shaped and whose diameter increases towards its front end, together with the annulus mounted on it,

(d) withdrawal of the mandrel from the socket body with radial expansion of the annulus which is secured against axial displacement while carrying with it the outer ends of the contact springs until abutment on the interior wall of the socket and

(e) deformation of the central head while carrying with it the inner ends of the contact springs, as well as

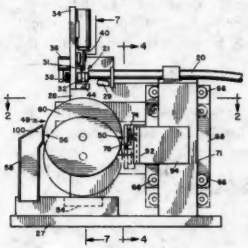
(f) optionally forming a flange by folding over the outer edge of the contact socket, to secure the annulus.

4,614,030

METHOD AND APPARATUS FOR AUTOMATICALLY PROCESSING THE WIRE ENDS OF WOUND TOROIDAL CORES

James D. Lint, San Diego, Calif., and Bryan P. Kent, Sisters, Oreg., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 16, 1985, Ser. No. 734,961
Int. Cl.[4] H01R *43/00*; B23P *19/00*
U.S. Cl. 29—885 **12 Claims**



1. Apparatus for processing the leading and trailing wire ends projecting axially from both sides of a wound toroidal core; comprising:

a forming die for bending projecting wire ends of a wound toroidal core;

a receiving means aligned with the forming die for receiving and locating a wound core at a position spaced from and aligned with said forming die;

orienting means for orienting a received wound core relative to said forming die such that the projecting wire ends are in a predetermined position remote from said die; said orienting means comprising means for rotating said wound core and sensor means for detecting when said wire ends reach said predetermined position remote from said forming die; and

loading means for urging said oriented wound core through said forming die, said forming die comprising means for sweeping said wire ends back to project parallel to one another and away from said wound core.

11. A method of automatically sequentially processing the leading and trailing wire ends projecting axially from both sides of a series of wound toroidal cores, comprising the steps of:

feeding one of the series of wound cores into a receiving station;

rotating the wound core until the wire ends reach a predetermined position;

urging the rotated core through a forming die aligned with the receiving station to bend back the projecting wire ends to project substantially parallel to one another;

feeding the next one of the series of wound cores into the receiving station such that a new wound core is received after each wound core has been urged through the forming die,

thereafter feeding the wound cores one after the other through the following processing steps:

cutting the bent back wire ends to a predetermined length;

dipping the cut wire ends in a solder bath for a predetermined time interval; and

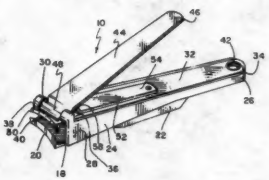
ejecting the finished core.

4,614,031

NAIL CLIPPER

Steve Y. Chen, 3 W. 13th St., Hutchinson, Kans. 67501

Filed Jun. 3, 1985, Ser. No. 740,395
Int. Cl.[4] A45D *29/00*
U.S. Cl. 30—28 **1 Claim**



1. A nail clipper comprising a stationary base having a structure defining a nail depository, a rear base end and a forward base end that terminates into a base jaw having a convexed base cutting edge;

a pair of parallel tapering side walls integrally bound to said stationary base, each side wall includes a back wall end and a front wall end having a top formed with a side wall recess seat means;

a resilient cover plate having a rear cover end bound to the rear base end and a forward cover end that terminates into a cover jaw having a convexed cover cutting edge that is capable of engaging the base cutting edge when the resilient cover plate is depressed;

a cover depressing lever with a lever depressing end and a lever lug end that defines a pair of lugs which are pivotally received by the pair of side wall recess set means;

and a fulcrum-lever retention bar having a first end rotatably connected to said cover plate and a second end defining a fulcrum-retention means having a dual purpose, such that when the fulcrum-lever retention bar is rotated forward the fulcrum-retention means engages the underside of the cover depressing lever in proximity to the lever lug end to provide a fulcrum means for depressing or lowering the resilient cover plate when the lever depressing end is depressed, and to retain the lever depressing end of the cover depressing lever when the fulcrum-lever retention bar is rotated rearward; and each of said two side wall recess seats means has an essentially semi-conduit structure with a semi-circular front, wherethrough said pair of lugs rotatably lodge and are retained therein through the upward biasing of the resilient cover plate; and said first end of said fulcrum-lever retention bar is rotatably connected to said cover plate in close proximity to the center thereof; and said fulcrum-retention means of said second end of said fulcrum-lever retention bar includes a top flange that is generaly parallel to the structure of said fulcrum-lever retention bar, and said lever depressing end can be slidably disposed underneath said top flange.

4,614,032
HAIR-CUTTING APPARATUS AND RAZOR

Stephan L. Szabo, Peteracherstrasse 2, CH-8126 Zumikon, Switzerland

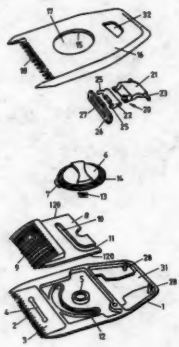
PCT No. PCT/CH83/00082, § 371 Date Mar. 8, 1984, § 102(e) Date Mar. 8, 1984, PCT Pub. No. WO84/00319, PCT Pub. Date Feb. 2, 1984

PCT Filed Jun. 27, 1983, Ser. No. 598,147

Claims priority, application Switzerland, Jul. 15, 1982, 4298/82

Int. Cl.[4] B26B *21/12*

U.S. Cl. 30—31 **7 Claims**



1. In a hair-cutting appliance, comprising: a housing, a blade held interchangeably in said housing, a cutting edge of said blade projecting beyond an edge of said housing, and a comb-like row of teeth bearing against said blade and projecting beyond said cutting edge thereof, means for varying the distance between the tips of said teeth and said cutting edge to effect an altering of the length of hair to be cut, and locking means for locking said tips of said teeth in various positions in relation to said blade, the improvement comprising wherein a retaining arm is secured to said housing at a location remote from said blade, said retaining arm having coupling means thereon adapted to be coupled to a razor-blade head, and enclosure means for housing said retaining arm and shielding said razor-blade head, if it is coupled to said razor-blade head, when said razor-blade head is not in use, wherein pivot means are provided for pivotally mounting said retaining arm to said housing, said enclosure means comprising an aperture in said housing through which said retaining arm is adapted to pivot from an inoperative position, in which said retaining arm is located within said housing, into an operative position, in which said retaining arm projects obliquely from said housing, said housing serving as a handle when said retaining arm is in said operative position, and wherein said housing consists of a lower part and an upper part, said aperture being provided in said lower part and a smaller aperture in said upper part adapted to receive a users finger therein for effecting a pushing of said retaining arm out of said aperture by said finger.

4,614,033
NUT MILL

Howard B. Morris, 5451 Fenmere Way, Salem, Oreg. 97310

Filed Apr. 30, 1984, Ser. No. 605,617

Int. Cl.[4] A23N *5/00*

U.S. Cl. 30—120.2 **4 Claims**

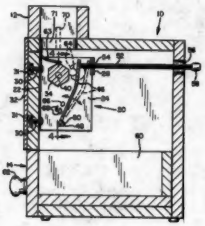
1. A nut mill for cracking the shells of nuts to permit easy removal of the nut meats from the nuts, the nut mill comprising:

(a) a frame;

(b) a rotatable, substantially cylindrical, multi-sided breaker, having from four to eight sides, and being mounted rotatably on the frame for rotation about its longitudinal axis;

(c) means for rotating the breaker;

(d) a cracking plate mounted on the frame and positioned in relation to the breaker to receive a nut therebetween, and being condigured so that at least a portion of the length of the cracking plate decreases in distance along the radial



dimension from the breaker, for compressing and cracking the nut shell as the breaker is rotated;

(e) a housing surrounding the frame and means for mounting the frame in the housing, the housing having an opening above the frame for admitting nuts; and

(f) a flexible flap mounted on the housing adjacent the side of the opening and extending to contact the breaker, to feed the nuts between the breaker and the cracking plate.

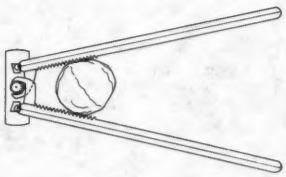
4,614,034
COMPRESSION-PRODUCING TOOL

Walter C. Russell, Jr., 10232 Tamarack Dr., Vienna, Va. 22180

Filed Apr. 9, 1985, Ser. No. 721,415

Int. Cl.[4] A47J *43/26*

U.S. Cl. 30—120.3 **6 Claims**



1. A compression-producing tool comprising

two lever arms hinged by pins in a common housing, said common housing having a separate elongated hole for each lever arm, said elongated holes determining the permitted distance of movement of said pins,

tension means connecting said pins to return said pins to the inward position of said elongated holes, and

a stop device that is engaged when stressed by an object placed between said lever arms and that is automatically disengaged when an object is not in place between said lever arms.

4,614,035
HAND HELD APPARATUS FOR DESTROYING HYPODERMIC NEEDLES

William M. Andrews, 12411 Renwick, Houston, Tex. 77035

Filed Jul. 2, 1984, Ser. No. 627,201

Int. Cl.[4] B23D *17/08;* B26D *5/10*

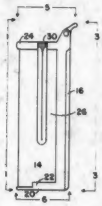
U.S. Cl. 30—124 **20 Claims**

1. An apparatus for cutting the needle off a hypodermic syringe and safely storing the spent needle comprising:

a housing;

a removable container mounted within said housing having a wall member with a longitudinal groove on its surface;

a lever arm having one end pivotly mounted on said housing;



cutting means, mounted on said lever arm and extending into said housing, for cutting the needle when the needle is placed into the housing and into the removable container and the lever arm is pivoted toward the housing.

4,614,036

COMB ATTACHMENT FOR A HAIR CLIPPER

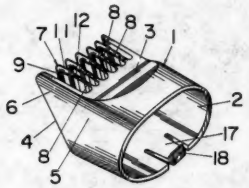
Hideaki Haraguchi, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Japan

Filed Oct. 30, 1984, Ser. No. 666,299

Claims priority, application Japan, Nov. 17, 1983, 58-216952

Int. Cl.[4] B26B *19/20, 19/02*

U.S. Cl. 30—200 **1 Claim**



1. A comb attachment for fitting over the end of the cutter assembly of a hair clipper having a transversely extending leading edge on the cutter assembly, said comb attachment comprising:

an upper surface and a lower surface positioned to lie parallel to the surfaces of the cutter assembly when installed thereover, said surfaces meeting at the front end portion of the attachment to define a front corner section which is close to and parallel with the leading edge of the cutter assembly when fitted thereover;

said front corner section having a plurality of slots forming hair introducing comb teeth leading into the cutter assembly;

the comb teeth each having an upper stem and a lower stem, said upper stems having a first barb configured to project both on the sides and upper surface of the upper stem to define therebehind a first rearwardly oriented shoulder, and the outer surfaces of said first barb tapering toward a tip lying on the front corner section; said upper stems further having second barbs spaced away from the front corner section and configured to project only on the upper face of the upper stem to define a second rearwardly oriented shoulder, the height of the second shoulder above the stem being less than the height of the first shoulder above said stem.

4,614,037

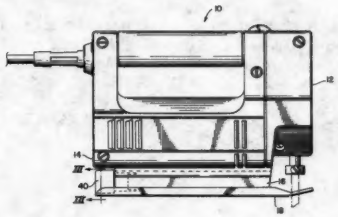
ACCESSORY STORAGE DEVICE FOR ELECTRIC JIGSAW

Robert I. Somers, Raleigh, N.C., assignor to Black & Decker, Inc., Newark, Del.

Filed Aug. 10, 1984, Ser. No. 639,406

Int. Cl.[4] B27B *19/09*

U.S. Cl. 30—392 **6 Claims**



1. In an electric jigsaw including a motor housing having an operative end, and including a pivot arch, and a shoe plate, said arch being secured to said shoe plate and securing said shoe plate to said housing for relative pivotal movement of the housing and shoe plate about the longitudinal axis of the arch, the improvement comprising:

an cavity defined by said arch and said shoe plate, said cavity axially extending for substantially the length of said housing and being open at the axial end thereof remote from said operative end; and

a plug removably disposed in the open axial end of said cavity, said plug including a plurality of axially-extending slots open into said cavity for removably receiving attachments for said saw.

4,614,038

HEAD FOR MEASURING DIAMETERS OF CYLINDRICAL PARTS

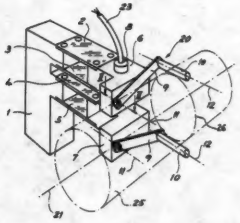
Robert Fivaz, Hauterive, Switzerland; Dieter Pfisterer, Stuttgart, Fed. Rep. of Germany, and Hans Sigg, Neuchâtel, Switzerland, assignors to Meseltron, S.A, Corcelles, Switzerland

Filed Sep. 3, 1985, Ser. No. 772,082

Claims priority, application France, Sep. 4, 1984, 84 13691

Int. Cl.[4] G01B *7/12*

U.S. Cl. 33—149 J **8 Claims**



1. Measuring head for measuring diameters of cylindrical parts, comprising a support, an upper block and a lower block which are attached flexibly to said support and arranged to be able to move away from or nearer to one another while remaining aligned with one another, a transducer for measuring the distance between the blocks, and two measuring projections for resting on the cylindrical part to be measured, said projections being fast with said upper block and said lower block respectively, each of said measuring projections comprising a crank with an arm and a cylindrical rod projecting

therefrom to form a measuring contact element, said arm being attached at a pivotal axis to the corresponding block by adjusting means whereby said arm can be fixed to said block at an adjusted position about said pivotal axis, said pivotal axes of said arms being parallel to each other and to said rods, whereby said rods remain parallel to each other whatever the angle of adjustment of each of said arms.

4,614,039

NIGHT SIGHT WITH LIGHT DIFFRACTION PATTERN

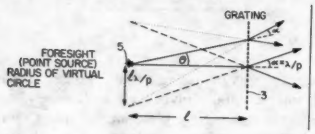
Oded Kafri, Beer-Sheva, and Aminadav Livnat, Arad, both of Israel, assignors to The State of Israel, Atomic Energy Commission, Nuclear Research Center Negev, Israel

Filed Dec. 27, 1984, Ser. No. 686,940

Claims priority, application Israel, Jan. 2, 1984, 70597

Int. Cl.[4] F41G *1/32, 11/00*

U.S. Cl. 33—241 **9 Claims**



1. In a sighting assembly adapted for use by an observer including a support, a backsight mounted on said support adapted to be situated close to an eye of the observer during use, and a foresight mounted on said support in alignment with said backsight, said foresight having light-emitting means, the improvement comprising, said backsight comprises a diffraction grating.

4,614,040

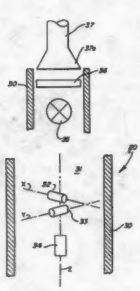
BOREHOLE SURVEY SYSTEM AND METHOD OF DETERMINING THE DIFFERENCE IN BOREHOLE AZIMUTH AT SUCCESSIVE POINTS

Rand H. Hulsing, II, Redmond; Rex B. Peters, Woodinville, and Kurt E. Steinke, Bellevue, all of Wash., assignors to Sunstrand Data Control, Inc., Redmond, Wash.

Division of Ser. No. 406,431, Aug. 9, 1982. This application Feb. 1, 1984, Ser. No. 576,024

Int. Cl.[4] G01C *19/00*

U.S. Cl. 33—312 **4 Claims**



1. A borehole survey system, comprising:

a borehole probe movable through the borehole;

an inclination sensor in said probe;

means connected with said sensor for deriving a first measure of borehole azimuth with a high degree of accuracy in a vertical borehole and a low degree of accuracy in a horizontal borehole;

means connected with said sensor for deriving a second measure of borehole azimuth with a high degree of accuracy in a horizontal borehole and a low degree of accuracy in a vertical borehole; and

means for combining said first and second borehole azimuth measures in accordance with the borehole inclination.

4,614,041

MAGNETIC ANGULAR POSITION SENSOR

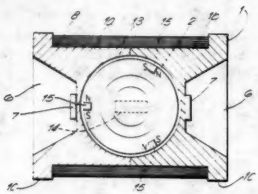
Kenneth S. Darton, Bishops Stortford, and Johnathan P. Larsen, Hitchin, both of United Kingdom, assignors to Standard Telephones and Cables Public Limited Company, London, England

Filed Apr. 25, 1985, Ser. No. 727,086

Claims priority, application United Kingdom, Apr. 26, 1984, 8410677

Int. Cl.[4] G01C *19/38*

U.S. Cl. 33—313 **10 Claims**



1. A magnetic angular position sensor comprising a housing having a chamber therein; a ballasted body within the chamber, the chamber being filled with a ferrofluid, the body having a pair of magnetic poles and having a substantial neutral buoyancy so that the body floats centrally within the ferrofluid filled chamber with the magnetic poles aligned with the earth's magnetic field; magnetic flux detection means attached to the housing at the exterior of the chamber; and magnetic flux producing means asymmetrically disposed on the body for interacting with the flux detection means such that the flux detection means is responsive to relative rotation of the body and the housing about an axis passing through the body.

4,614,042

MEASURING AND INSTRUCTIONAL RULER DEVICE

Francis E. Maurer, 14600 Barkwood Ct., Chester, Va. 23831

Filed Nov. 22, 1985, Ser. No. 800,812

Int. Cl.[4] G09B *9/12*; B43L *7/00*

U.S. Cl. 33—494 **4 Claims**

1. A measuring and instrucional ruler comprised of:

(a) a base panel having flat upper and lower faces, an elongated rectangular perimeter bounded by parallel straight upper and lower long edges and parallel straight short leading and trailing end edges, said upper face having one inch subdivisions delineated by both visual indicia and tactile features, said subdivisions beginning with a zero line, and

(b) a top panel having flat upper and lower faces, parallel straight upper and lower edges, and a series of tabs having parallel straight leading and trailing side edges directed perpendicularly upward from said upper straight edge to a straight upper extremity perpendicularly disposed to said side edges and defining the width of the tab, said tabs having sequentially increasing widths corresponding to fractions of an inch and associated visual or tactile indicia, said trailing side

edges being spaced one inch apart, and the distance between the upper extremities of the tabs and lower edge of the panel being substantially equal to the distance between upper and lower long edges of said base panel, and the lower face of said top panel being adapted to slide across the upper face of said base panel.

4,614,043

APPARATUS FOR DESIGNING A COUPLER

Ryuzo Nagano; Shinobu Arai, both of Osaka, and Koji Matsui, Sennan, all of Japan, assignors to Osaka Shipbuilding Co., Ltd., Osaka, Japan

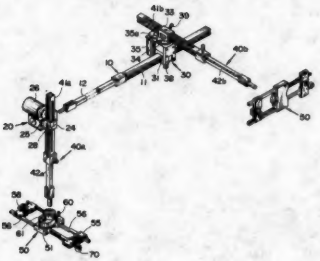
PCT No. PCT/JP84/00455, § 371 Date May 17, 1985, § 102(e) Date May 17, 1985, PCT Pub. No. WO85/01574, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 22, 1984, Ser. No. 743,998

Claims priority, application Japan, Sep. 30, 1983, 58-182446

Int. Cl.[4] G01B *5/00, 5/24*

U.S. Cl. 33—529 4 Claims



1. A measuring apparatus for designing the shape of a coupler to be fitted between the flanged ends of already assembled pipes in a pipe system, comprising:

a rod member for gauging the distance between points of bend in said coupler,

a pair of first and second arms for gauging the distance between each of said points of bend and the corresponding flanged end,

a first junction member having at least a first surface and a second surface whose plane is perpendicular with that of said first surface, coupling means pivotally connected in said first surface of said first junction member for coupling to one end of said rod such that said rod is pivotable about its axis, holding means pivotally connected in said second surface of said first junction member for holding therein said first arm such that said first arm is pivotable about an axis perpendicular with that of said rod and also slidable with respect to said first junction member,

electrical detection means provided in said first junction member for electrically measuring the angle defined by relative rotation of said rod about its axis to said first arm, the angle defined by relative rotation to said rod of said first arm about the axis perpendicular with that of said rod, and the amount of linear movement of said first arm with respect to a reference point,

a second junction member having at least a first and second surface opposite to each other, a first sleeve provided on said first surface which permits movement of said rod therethrough such that said second junction member can take any position along said rod with respect to said first arm, and a second sleeve pivotally connected to said second surface for holding said second arm therein such that said second arm is rotatable about an axis perpendicular to that of said rod and is also slidable with respect to said second junction member,

electrical detection means provided in said second junction member for electrically measuring the distance between said first and second junction members along said rod, the angle defined by relative rotation of said second arm to said rod, and the amount of linear movement of said second arm with respect to a reference point,

a pair of engagement plates for engaging with the respective flanged ends which are rotatably connected to the opposite ends of said first and second arms, respectively, and,

electrical detection means provided in each of said engagement plates for measuring the angle defined by relative movement of each engagement plate about its associated arm.

4,614,044

METHOD AND APPARATUS FOR OPTIMIZING THERMAL TREATMENT PROCESSES FOR FABRICS

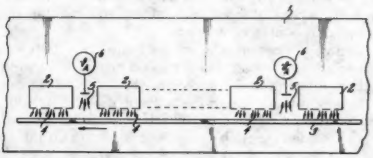
Gerhard Fiedler, Greiz, and Werner Fritzsche, Greiz-Moschwitz, both of German Democratic Rep., assignors to VEB Forschung und Entwicklung and Betrieb des VEB Kombinat Wolle und Seide, both of Greiz, German Democratic Rep.

Filed Nov. 27, 1984, Ser. No. 675,384

Claims priority, application German Democratic Rep., Dec. 30, 1983, 258991

Int. Cl.[4] F26B *3/04*

U.S. Cl. 34—25 1 Claim



1. A method for the optimization of the thermal treatment of a fabric in a tensioning, drying and setting apparatus comprising passing the fabric through a plurality of contiguous heating zones, into each of the zones introducing air heated to substantially the same temperature and directing the air into immediate contact with a surface of the fabric at three areas each closely spaced downstream from the preceding area, in each of the zones immediately uptaking air reflected off the fabric surface in the two intermediate areas defined by the spaces between said three closely spaced areas, immediately sensing the respective temperature of the air uptaken at each of said intermediate areas, registering the temperature differences between the two sensed temperatures in each of the zones, comparing the temperature differences registered in all of the zones, registering the location of said zone exhibiting the greatest said temperature difference, said greatest temperature difference identifying the location of the zone in which drying of the fabric is first completed, registering the temperature to which it is desired further to heat the dried fabric, in the zones located downstream from the zone in which the fabric is first dried comparing the temperature of each uptaken air stream with the desired fabric temperature, registering the temperature differences between the desired fabric temperature and the uptaken air stream temperature for all of the uptaken air streams in said downstream zones, registering the location of the zone in which the difference between the desired fabric temperature and the temperature of an uptaken air stream most closely approximates zero, said approximately zero temperature difference identifying the location of the zone in which further heating of the dried fabric is to be considered first completed, and regulating at least one of the linear speed of the fabric and the volumetric rate of delivery and the temperature of the heated air to control the locations of the respective zones at which drying is first completed and further heating of the dried fabric to the desired fabric temperature is first completed.

4,614,045

METHOD AND APPARATUS FOR CIRCULATING HOT AIR IN BOARD DRYING APPARATUS

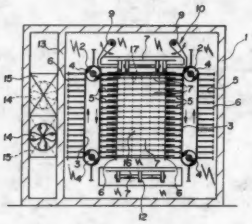
Kiyoshi Nagasawa, Chita; Mitsuhiro Kuroyanagi, Okazaki, and Tadashi Aizawa, Nagoya, all of Japan, assignors to Hashimoto Denki Co., Ltd., Aichi, Japan

Filed Apr. 18, 1985, Ser. No. 724,683

Claims priority, application Japan, Apr. 27, 1984, 59-87223

Int. Cl.[4] F26B *3/04, 21/12*

U.S. Cl. 34—34 **7 Claims**



6. A board drying method comprising:

supporting boards to be dried with a pair of spaced fork conveyors, with said boards oriented horizontally and spaced vertically from each other, and moving the thus supported boards downwardly;

circulating hot air in a horizontal direction between said boards through space between said pair of fork conveyors, thereby drying said boards; and

dividing said space into a central portion and opposite side portions, and regulating the relative amounts of said hot air circulated through said portions, such that the amount of said hot air circulated through said opposite side portions is less than the amount of said hot air circulated through said central portion, thereby controlling the relative extent of drying of central portions and opposite side portions of said boards.

4,614,046

SHOE SOLE HAVING A MIDSOLE CONSISTING OF SEVERAL LAYERS

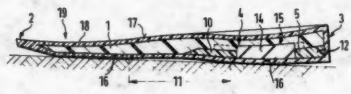
Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to PUMA-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

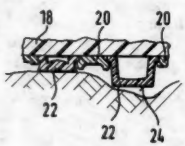
Filed Feb. 25, 1985, Ser. No. 705,002

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1984, 8423344[U]

Int. Cl.[4] A43B *13/12*

U.S. Cl. 36—30 R **25 Claims**





1. An athletic shoe sole for attachment to a shoe upper, comprising an outer sole and a midsole having several layers, wherein the midsole has a softly elastic inner part extending from an area of a tip of the toe of the sole to the heel, a hard-elastic stabilizer that extends under at least a portion of the medial side and less than all of the lateral side of a rear half of the inner part, a softly elastic cushioning piece that extends under the rear half of the inner part in areas other than that where the stabilizer extends, the inner part, the stabilizer and the cushioning piece forming an inner midsole unit, and a softly elastic sheathing surrounding said inner midsole unit on all sides.

4,614,047

SKI BOOT CLOSING AND TIGHTENING APPARATUS

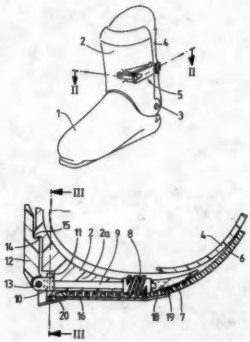
Simon Arieh, and Guy Courvoisier, both of Geneva, Switzerland, assignors to Lange International S.A., Fribourg, Switzerland

Filed Apr. 19, 1985, Ser. No. 725,258

Claims priority, application Switzerland, May 2, 1984, 2128/84

Int. Cl.[4] A43B *11/00, 5/04*

U.S. Cl. 36—50 **9 Claims**



1. A ski boot comprising at least two portions having overlapping edges for surrounding the leg or ankle and at least one closing and tightening device for interconnecting said two portions, said device comprising a cogged strap secured to one of said boot portions and adapted to cooperate with hooking and tightening means secured to the same boot portion or to the other boot portion, wherein said cogged strap comprises helical teeth and said hooking and tightening means consists on the one hand of a worm-screw extending along said strap and having manual actuating means, and on the other hand of means for guiding said cogged strap in meshing engagement with said worm-screw, pivot means being further provided for moving said cogged strap away from or toward said worm-screw.

4,614,048

SNOW PLOW APPARATUS WITH HINGED SIDE BLADE

Phillip J. Melby, Box 656, Mason City, Iowa 50401

Filed Nov. 18, 1985, Ser. No. 799,256

Int. Cl.[4] E01H *5/06*

U.S. Cl. 37—280 **3 Claims**

1. Snow plow apparatus wherein the improvement comprises a two component snow plow scraper blade consisting of:

a—a major segment of snow plow scraper blade

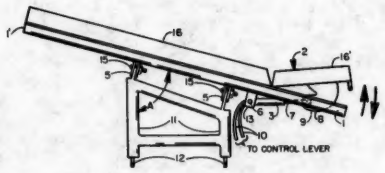
b—a snow plow scraper wing segment attached to said major segment of scraper blade

c—and wherein trailing edge of said snow plow scraper wing segment aligns with trailing edge of said major segment of snow plow scraper blade

d—and leading edge of said snow plow scraper wing segment is attached by hinge mounts to said major segment of snow plow scraper blade

e—to allow forward and return pivot action of said scraper wing segment trailing edge

f—hydraulic piston rod extending through slot of said major segment of snow plow scraper blade and



g—said hydraulic piston rod attached to scraper wing drive arm

h—said scraper wing drive arm attached to back of said scraper wing blade segment

i—and means to actuate said hydraulic piston rod

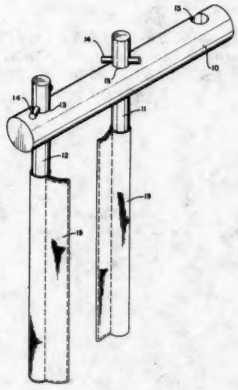
j—to move said scraper wing blade segment in a forward and return direction.

4,614,049

SMOCKING FRAME

Priscilla C. Riley, 4212 Frederick Farms Dr., Midlothian, Va. 23113, and Charles R. Riley, 1 Highland Rd., Richmond, Va. 23228

Filed Sep. 25, 1984, Ser. No. 654,218
Int. Cl.[4] D06C *3/08*
U.S. Cl. 38—102.91 **3 Claims**



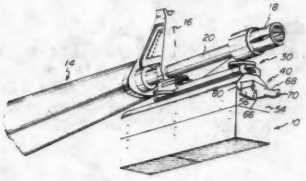
1. A three sided smocking apparatus comprising at least two dowel-receiving slots, said slots being positioned at predetermined positions along a crossbar; and a plurality of dowels extending perpendicularly from said crossbar and passing through said dowel receiving slots to be rotatably supported therein, a first end portion of said dowels containing a retaining means for holding the dowels in place on said crossbar, and a second end portion of said dowels being open ended to provide an unobstructed access to said crossbar, said dowels containing fabric retaining means attached thereon to receive and support a needlework material therebetween.

4,614,050

PROTECTIVE SHUTTER WITH CLEANING APERTURE FOR PORTABLE LASERBEAM AIMING DEVICE

Frederick G. Stevens, Bridgeport, Conn., assignor to Hydra Systems International, Inc., Bridgeport, Conn.

Filed Jun. 27, 1984, Ser. No. 625,128
Int. Cl.[4] F41G *1/04, 11/00*
U.S. Cl. 42—1.01 **7 Claims**



1. A laser aiming device for attachment to a firearm comprising:

a housing having an aperture;

a laser mounted in said housing and oriented to emit a beam through said aperture; and

shutter means for opening and closing said aperture including

a substantially L-shaped shutter plate comprising a longer leg having an aiming opening, a larger cleaning opening and a solid portion, and a shorter leg adapted to provide a fingerpull, and

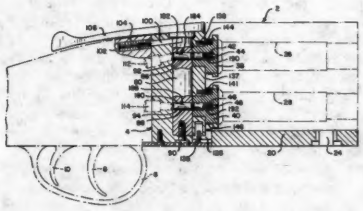
a stationary frame comprising a track adapted to slidably receive and retain the larger leg of the shutter plate and mounted over said aperture for interchangeable movement from a first position where the aiming opening is in registration with said aperture, to a second position where the cleaning opening is in registration with said aperture, and to a third position where the solid portion is in registration with and closes the aperture.

4,614,051

FIREARM CONSTRUCTION

George R. Thacker, 2554 Interlaken Ct., Wexford, Pa. 15090

Filed May 9, 1984, Ser. No. 608,578
Int. Cl.[4] F41C *11/10*
U.S. Cl. 42—12 **35 Claims**



1. A firearm comprising

a barrel assembly having a barrel block and a pair of barrels

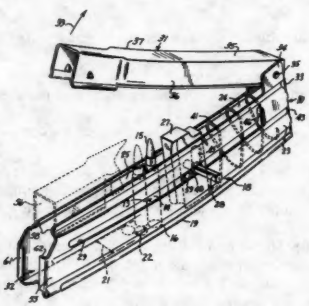
with associated chambers mounted in over and under relationship,
a breech block pivotally mounted with respect to said barrel assembly,
said breech block having a generally forwardly projecting water table,
pivot means for pivotally connecting said barrel assembly and said water table,
said pivot means facilitating relative rotation of said barrel assembly and water table in opening in either of two directions,
stop means for permitting relative rotation of said barrel assembly with respect to said breech block in a first direction while resisting relative rotation in the other direction,
locking means for retaining said barrel assembly and breech block in desired relative relationship for firing said firearm, and
said locking means including first locking means on said barrel assembly and second locking means on said breech block.

4,614,052

FIREARM MAGAZINE AND MAGAZINE LOADER

Robert C. Brown, 2138 E. Petunia, and William Gomez, 714 S. Pennsylvania Ave., both of Glendora, Calif. 91740

Filed Jun. 28, 1985, Ser. No. 750,100
Int. Cl.[4] F42B *39/06*; F41C *25/02*
U.S. Cl. 42—87 **36 Claims**



1. In a method of charging a magazine for a firearm with cartridges each comprising a hollow-cylindrical shell carrying a bullet at a first end thereof and having a circular bottom at an opposite second end thereof, in which method the cartridges are placed in a channel-shaped elongate container having side walls and a closed bottom wall extending longitudinally of said container, and being closed by a lid before said placed cartridges are transferred from the container into the magazine, having an opening through which said placed cartridges are transferred into said magazine, and containing a cartridge seater with projecting handle by way of which said placed cartridges are pushed through said opening into the magazine, the improvement comprising in combination the steps of:
making said bottom wall of a width of more than one and less than two diameters of said circular bottom;
making each of said side walls correspond in height to a height of said shell from said circular bottom;
providing said channel-shaped container with an elongate open top extending between said side walls opposite and parallel to said closed bottom wall and corresponding in width to said bottom wall;
providing one of said side walls with an elongate slot for projection of said handle out of said one side wall of the container and movement of said handle and cartridge seater along said container;
placing said cartridges through said open top into said container so that the circular bottom of each cartridge is located at said closed bottom wall, so that the shell of each cartridge extends parallel to and is retained between said side walls and so that the bullets of said cartridges are located at said open top; and
providing said lid for closure of said open top above said bullets as seen from the circular bottoms of said placed cartridges, preparatory to placement of said container at said opening on the magazine and transfer of the latter placed cartridges with said handle and seater into the magazine through said opening.

4,614,053

SNAP LINK TYPE CARTRIDGE SPEED LOADING DEVICE

Joe L. Billman, 340 N. Lincoln, Pocatello, Id. 83201

Filed Apr. 5, 1984, Ser. No. 597,039
Int. Cl.[4] F42B *39/04*
U.S. Cl. 42—89 **8 Claims**

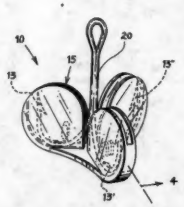
1. A device for speed loading revolver type firearms, said device comprising an articulated, head to toe, series of three dimensional, resilient links, equal in number to the number of chambers in a specific revolver cylinder; said links having open sides shaped and sized to grip cartridges by snapping around a partial circumference in the cartridge base region, and having depth sufficient to axially stabilize said cartridges retained therein; said device when loaded with cartridges comprising a linear assembly of parallel cartridges capable of being rolled into a circular configuration matching the revolver chamber pattern for the simultaneous insertion of the cartridges into the cylinder chambers and subsequent release into said chambers through a radil/tangential pull on the first link; said pull causing a serial hyperextension and outward rotation of the individual links to release their corresponding cartridges; and said links being hinged together such that the first cartridge released in the loading sequence is retained above the cylinder's surface by the toe of the last link and acts as a hyperextension point for the last link to effect positive release of the device from the last cartridge.

4,614,054

FISH HOOK PROTECTIVE COVER

Otto K. Fovenyessy, 2693 Eaton Ave., San Carlos, Calif. 94070

Filed Apr. 22, 1985, Ser. No. 725,905
Int. Cl.[4] A01K *83/00*
U.S. Cl. 43—43.2 **1 Claim**



1. A sheath article for covering each of a plurality of barbed hook portions of a plural-barbed fish hook comprising a flexible base, a plurality of protective pockets each being formed to include a pair of spaced confronting side walls disposed upon

said base in a manner whereby said base forms the bottom of each pocket, the top of each pocket being open and unobstructed from above for permitting the hook portions to be axially inserted and withdrawn respectively into and out of associated pockets either simultaneously or separately, said pockets being arranged radially of each other and spaced from and independent of each other to permit each pocket and its underlying base portion to flex and move away from its associated hook portion independently of the other pockets for removing said hook portions separately.

4,614,055

APPARATUS FOR CONDUCTING A LIQUID TO EACH OF A PLURALITY OF TRUNKED PLANTS

Robert E. Day, Bloomfield Hills, Mich.

Filed Apr. 26, 1984, Ser. No. 604,227
Int. Cl.[4] A01G *13/00*
U.S. Cl. 47—2 **8 Claims**

1. An apparatus for use in conducting a liquid to each of a plurality of trunked plants, said apparatus comprising:

A. a plurality of flexible hose members each adapted to be connected at its lower end to a source of liquid at the base of a respective trunk and wound helically upwardly around that trunk to dispose its upper end at a location intermediate the base of the trunk and the top of the plant; and

B. a plurality of collar members each adapted to encircle a respective trunk at such intermediate location thereon and each having a fitting for connection with the upper end of a respective hose member and a plurality of circumferentially spaced discharge openings operative to discharge liquid delivered to the collar through the respective hose member onto the trunk for gravity flow back down the trunk in intimate wetting contact with the exterior surface of the trunk.

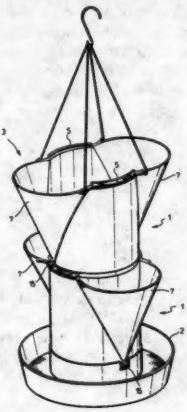
4,614,056

STACKING PLANTERS

Frank Farkas, Concord, Canada, assignor to F.F. Plastics R.D. Inc., Concord, Canada

Filed Jan. 22, 1985, Ser. No. 693,335
Int. Cl.[4] A01G *9/02*
U.S. Cl. 47—67 **6 Claims**

1. A hanging planting arrangement including at least first and second like and vertically stacking interlocking planters, each planter comprising a lower end provided with a first interlock component and an upper end provided with both at least one planting region and a second interlock component remote from said planting region circumferentially offset from said first interlock component and complimentary therewith to form an interlock between the upper end of one of said planters and the lower end of the other of said planters, each of which is interchangeable in up and down position above and below



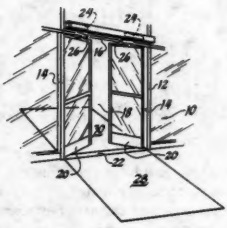
one another with the interlock therebetween providing all support for the planter in the down position.

4,614,057

AUTOMATIC OPERATING SYSTEM AND METHOD FOR SWINGING DOORS

Robert Sorber, Charlotte, N.C., assignor to Keane Monroe Corporation, Monroe, N.C.

Filed Jul. 8, 1985, Ser. No. 752,775
Int. Cl.[4] E05F *15/20*
U.S. Cl. 49—29 **8 Claims**



1. In an automatic door operating system of the type comprising a doorway having an entrance side and an exit side, a door, means supporting said door in said doorway for swinging movement between a closed position separating said entrance and exit sides and an open position on said exit side, first means for sensing an object at said entrance side of said doorway, second means for sensing an object at said exit side of said doorway, and means for actuating said swinging movement of said door, the improvement comprising control means operatively associated with each said first and second sensing means and with said actuating means for controlling operation of said actuating means in relation to said first and second sensing means, said control means including primary operating means for causing said actuating means automatically to swing said door in an opening direction from said closed position to said open position and then automatically to return said door in a closing direction from said said open position to said close position when said first sensing means senses an object at said entrance side of said doorway and override means for causing said actuating means automatically to stop said swinging

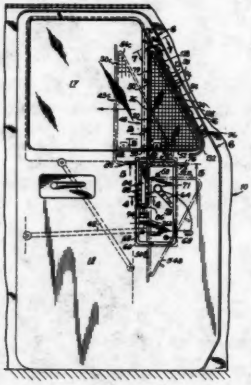
movement of said door in said opening direction and then automatically to return said door in said closing direction to said closed position when said second sensing means senses an object at said exit side of said doorway while said door is within a predetermined initial range of said swinging movement in said opening direction and for preventing said swinging movement of said door in said opening direction from said closed position while said second sensing means senses an object at said exit side of said doorway.

4,614,058

PROTECTIVE SYSTEM FOR VAN AND TRUCK VENT WINDOWS

Richard C. Boykin, 245 7th Ave., New York, N.Y. 10001

Filed Jun. 24, 1985, Ser. No. 747,960
Int. Cl.[4] E06B *3/68*
U.S. Cl. 49—56 **16 Claims**



1. A protective system for a vent window on the front door of a motor vehicle rotatably secured to a vent window frame and movable about a vertical axis between open and closed positions, the vent window being held in the closed position by a vent window latch rotatably secured to the vent window about a horizontal axis transverse to the vehicle in a vertical plane lateral to the vehicle between locked and unlocked positions, wherein in the locked position the latch is wedged against the vent window frame and in the unlocked position the latch is free of the vent window frame, comprising, in combination:

mesh means positioned inside said vehicle proximate and lateral to said vent window for preventing access to the inside of said vehicle and for providing visual access through said vent window for the driver of said vehicle,

first mounting means positioned below said mesh means for securing said mesh means to the inside of said door,

second mounting means positioned forward of said mesh means for securing said mesh means to said door at said vent window frame, and preventing said mesh means from being moved either forwardly or laterally relative to said vehicle, and

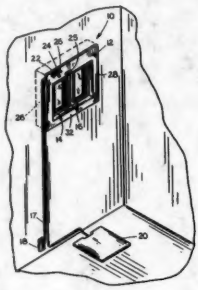
latch blocking means connected to said mesh means for preventing said vent window latch from being moved from said locked position to said unlocked position.

4,614,059

AUTOMATIC WINDOW

Douglas R. Trampe, 1904 Bel Air, Norfolk, Nebr. 68701

Filed Jul. 1, 1985, Ser. No. 750,936
Int. Cl.[4] E05F *17/00*
U.S. Cl. 49—118 **11 Claims**



1. An automatic window, comprising

a frame including a pair of upright transversely spaced-apart side walls and a top wall connected to and extended between said side walls,

a pair of window units,

means for supporting said window units on said frame for pivotal movement about respective upright axes between closed positions lying generally within an upright transverse plane through said frame and open positions disposed generally perpendicular to said plane,

the combined widths of said window units being substantially less than the spacing between said frame side walls whereby, in the closed positions of said window units, clearance spaces are provided between said window units and between each window unit and the adjacent frame side wall,

resilient deformable finger guards on opposite side edges of said window units, said finger guards substantially filling said clearance spaces upon movement of the window units to the closed positions,

mechanical drive means interconnecting said window units for rotation in unison in opposite directions between the open and closed positions thereof,

power means operatively connected to said drive means and actuatable to move said window units between the open and closed positions thereof,

hands free switch means electrically connected to said power means for actuating said power means,

coacting lock means on said frame and window units, said lock means including a lock tab movable between a locked position wherein movement of the window units from the closed positions is obstructed and an unlocked position wherein movement of the window units from the closed positions is unobstructed, and

switch means associated with said lock means for deactivating said power means in response to movement of said lock means to the locked position thereof.

4,614,060

AUTOMATICALLY ACTUATED SEAL FOR SEALING BUILDINGS, PARTICULARLY DOORS AND WINDOWS

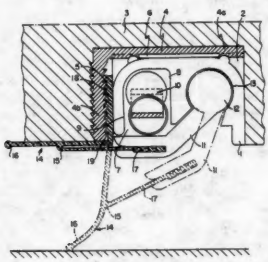
Claude G. Dumenil, 6, rue Lenepveu, 76000 - Rouen, and Louis P. Dumenil, 3550 Route de Neufchatel, 76230 - Bois-Guillaume, both of France

Filed Apr. 26, 1983, Ser. No. 488,719

Claims priority, application France, Apr. 26, 1982, 82 07141

Int. Cl.[4] E06B *7/20*

U.S. Cl. 49—303 **7 Claims**



1. An automatic seal arrangement, for a panel of a building moveable in an opening of the building, to seal between the interior of the building and the exterior ambient environment outside of the building, when the moveable panel is closed, said seal arrangement comprising, a profile molding adapted to be connected to a portion of the building adjacent the opening of the building, said profile molding having a groove, an elongated moveable seal member in said groove, a seal gasket having a first leg, a second leg, and a third leg extending from a junction zone forming a hinge, said first leg comprising means for sealing against a surface of the building, said second leg being secured to said seal member, and said third leg having an end secured relative to said profile molding at a location between said groove and the exterior of the building, means mounting said seal member in said profile molding for movement between a retracted position in which said seal gasket is retracted, and an extended position in which said first leg of the seal gasket is extended into sealing engagement with a surface of the building and said second and third legs diverge relative to each other, said second and third legs forming a barrier isolating the seal member relative to the ambient environment outside the building, at least in said extended position.

4,614,061

DEVICE FOR GUIDING AND HOLDING A WINDOW PANE IN A MOTOR VEHICLE

Rolf Brocke, Wangen, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

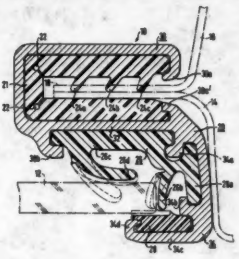
Filed Nov. 23, 1984, Ser. No. 674,067

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342362

Int. Cl.[4] E06B *7/16*

U.S. Cl. 49—440 **13 Claims**

1. Device for guiding and holding a window pane in an opening formed in a body of a motor vehicle having a projection at the opening, comprising a one-piece metal profile having an S-shaped cross section formed of first and second oppositely directed U-shaped clamping regions, a first U-shaped bent rubber profile disposed in said first U-shaped clamping region for at least partially surrounding the projection, and at least one second rubber profile disposed in said second U-



shaped clamping region for guiding and at least partially surrounding the window pane.

4,614,062

METAL FRAME ASSEMBLY FOR WINDOWS OR DOORS

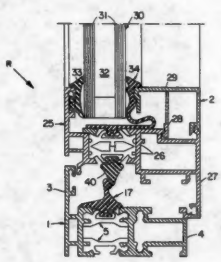
Karl Sperr, Chur, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 19, 1984, Ser. No. 672,704

Claims priority, application Switzerland, Nov. 30, 1983, 6387/83

Int. Cl.[4] E06B *1/04;* **E05D** *7/00*

U.S. Cl. 49—504 **9 Claims**



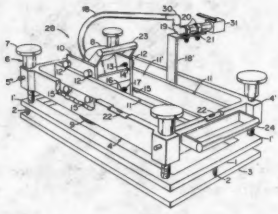
1. An insulated metal frame assembly for windows and doors comprising at least two opposed metal sections which are joined together by an insulating strip provided with a strut and with a channel to receive a seal, said channel being formed by a pair of clamping strips projecting out from said strut of said insulating strip to form an undercut groove and said seal being provided with a hammer-head-shaped projection having a groove which receives the pair of clamping strips such that the hammer-head-shaped projection of said seal is received in said undercut groove, wherein each of said at least two opposed metal sections is provided with a pair of spaced apart wedge-shaped strips defining substantially U-shaped undercut grooves in each of said sections and said strut is provided with heads on its ends which are adapted to engage the wedge-shaped strips on said at least two opposed metal sections.

4,614,063

APPARATUS FOR FINISHING SURFACES

Roger P. Crivaro, R.D. #2, Box 454C, Greensburg, Pa. 15601; Ronald G. McHenry, 5237 Sadelpack Trail, Murrysville, Pa. 15668, and Ronald M. McHenry, 2713 Food Ave., Pittsburgh, Pa. 15235

Filed Apr. 8, 1985, Ser. No. 720,545
Int. Cl.[4] B24B *7/18*
U.S. Cl. 51—174 **13 Claims**



1. An apparatus for use in combination with a power driven grinding mechanism, comprising:

a. a support base having a framed-like structure enclosing an interior portion;

b. a leveling base disposed above the support base having a vertically height-adjustable means for supporting said leveling base on said support base, said leveling base having a frame like structure enclosing an interior portion; and

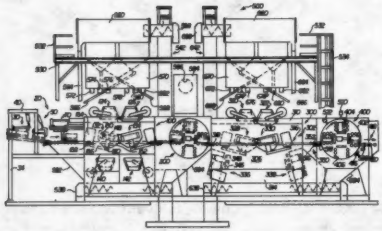
c. means for supporting a grinding mechanism within the interior portion of the leveling base at a fixed vertical position relative to the leveling base.

4,614,064

METHOD AND APPARATUS FOR CLEANING WORKPIECES

Horace A. Bailey, Smithburg, and Jack B. Grier, Hagerstown, both of Md., assignors to Kennecott Corporation, Cleveland, Ohio

Continuation of Ser. No. 392,306, Jun. 25, 1982, abandoned. This application Feb. 1, 1985, Ser. No. 697,564
Int. Cl.[4] B24C *3/10*
U.S. Cl. 51—420 **15 Claims**



1. Apparatus for cleaning a succession of workpieces having various outer configurations comprising:

a first cleaning mechanism for directing coincident streams of cleaning media against predetermined surfaces of a plurality of workpieces, said first cleaning mechanism including a chamber having open entrance and exit ends, a path of travel extending through the chamber from the entrance end to the exit end along which workpieces are advanced in end to end contact, and a plurality of blast wheels disposed adjacent the path of travel, the blast wheels directing cleaning media against the workpieces;

an advancing mechanism for moving the workpieces along the path of travel through the first cleaning mechanism, the advancing mechanism including a first conveyor, a clamp for engaging and controlling movement of the workpieces along the first conveyor, a stop for engaging the workpieces and preventing their movement along the first conveyor, workpieces being permitted to be advanced to the stop upon selective actuation of the clamp, a second conveyor for advancing workpieces from the first conveyor to the first cleaning mechanism, and a pusher for engaging the workpieces to force them into the first cleaning mechanism, workpieces being presented to the pusher sequentially upon selective actuation of the stop and the second conveyor;

a turning mechanism for inverting and spacing the workpieces after their exit from the first cleaning mechanism;

a control switch positioned at the discharge end of the first cleaning mechanism, the control switch serving to actuate the advancing mechanism only when a workpiece has exited from the first cleaning mechanism; and

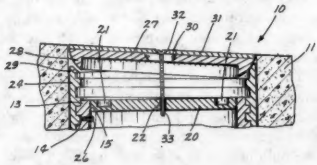
a second cleaning mechanism for directing cleaning media against surfaces of the workpieces not cleaned by the first cleaning mechanism, said second cleaning mechanism including a chamber having open entrance and exit ends, a path of travel extending through the chamber from the entrance end to the exit end along which workpiece are advanced, a plurality of blast wheels disposed adjacent the path of travel, the blast wheels directing cleaning media agaisnt the workpieces, and means for moving the workpieces along the path of travel, the means for moving the workpieces along the path of travel also maintaining the workpieces in a pre-determined spaced relationship as the workpieces advance along the path of travel.

4,614,065

ADJUSTABLE PLUMBING CLEANOUT

David J. Papp, 431 N. Grandview Blvd., Waukesha, Wis. 53186

Filed May 31, 1985, Ser. No. 739,528
Int. Cl.[4] E02D *29/14*
U.S. Cl. 52—20 **5 Claims**



1. An adjustable plumbing cleanout apparatus comprising:

an inner cylindrically shaped body having an outer portion having threads disposed on the exterior thereof, and having a predetermined inner diameter;

means for attaching said inner body to a top portion of a plumbing cleanout pipe having an outer diameter smaller than said predetermined inner diameter of the inner body;

means for forming a seal between the outer top portion of said cleanout pipe and the inner portion of said inner body;

a cylindrical member having an outer diameter and an inner diameter larger than the diameter of said outer portion inner body whereby said cylindrical member can be selectively slideably disposed over said inner body so that concrete poured around said cylindrical member will not come into contact with a substantial portion of the threads on the inner body and whereby said cylindrical member can be selectively removed from around said inner body after the concrete has cured;

an outer cylindrically shaped body having an outer diameter no larger than the outer diameter of said cylindrical member and having thread means on the interior thereof for mating with the outer thread means on said inner body

whereby said outer body can be threaded onto said inner body in a space vacated by said cylindrical member, disposed between the cured concrete and the inner body;

plug means for selectively sealing the top of said inner body;

cap means adapted to engage the top of said outer body, said cap means having a partially spherical surface around the lower outer periphery thereof and the top of said outer body having a complementary shaped partial spherical surface thereon for providing a mating slideable joint between said cap means and said outer body; and

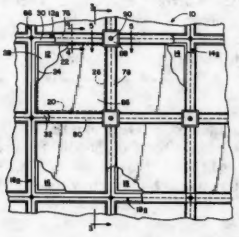
means for attaching a central portion of said cap means with said plug means whereby said cap means will be held in place.

4,614,066

MODULAR COLUMBARIUM STRUCTURE

Bruce G. Koppenberg, 9674 Mt. Baker Hwy., Deming, Wash. 98244

Filed Dec. 9, 1985, Ser. No. 806,425
Int. Cl.[4] E04H *13/00*
U.S. Cl. 52—134 **9 Claims**



1. A columbarium structure comprising at least a pair of preformed niche units, each unit having bottom and top walls and opposed side walls substantially normal to the bottom and top walls and imparting a substantially rectangular cross-section to the unit in elevation, the walls of the unit having front edges defining an open front for the unit, said unit having a foam plastic composition,

said units being disposed with a wall in one unit paralleling and adjacent a wall in the other unit and with other walls in the units substantially coplanar,

a bracket spanning and secured to said other coplanar walls adjacent the front of the units holding the units together at a fastening zone,

a channel member fitting over front edges of parallel walls of the units, and

a holding plate secured to said bracket and holding the channel member in place.

4,614,067

ASSEMBLY OF PREFABRICATED PANEL UNITS HAVING LAPPING WATERTIGHT SEALS

Isamu Matsubara, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed May 30, 1985, Ser. No. 739,430
Claims priority, application Japan, Jun. 11, 1984, 59-86537[U]
Int. Cl.[4] E04B *1/66, 2/88*
U.S. Cl. 52—235 **8 Claims**

1. A prefabricated panel assembly for use as a roof, curtain wall or the like, comprising:

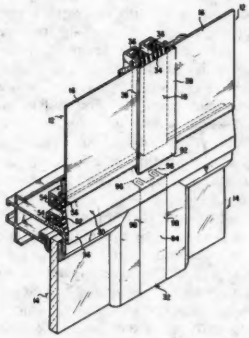
(a) a plurality of panel units arranged in rows and columns;

(b) seal support means secured to and extending along the periphery of each panel unit;

(c) a plurality of dry vertical sealing strips for watertightly sealing the vertical joints between the panel units, each vertical sealing strip having a web arranged between two horizontally adjoining panel units and adapted to engage with the seal support means, each vertical sealing strip further having flange means in a lapping relation with two horizontally adjoining panel units;

(d) a plurality of dry horizontal sealing strips for watertightly sealing the horizontal joints between the panel units, each horizontal sealing strip having a web arranged between two vertically adjoining panel units and adapted to engage with the seal support means, each horizontal sealing strip further having flange means in a lapping relation with two vertically adjoining panel units;

(e) the flange means of the vertical and horizontal sealing strips being adapted to form watertight lap joints at the intersections of the vertical and horizontal sealing strips; and



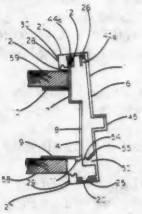
wherein each horizontal sealing strip extends throughout the joint between every two adjoining rows of panel units, and wherein each vertical sealing strip is mounted between every two horizontally adjoining panel units, the flange means of each horizontal sealing strip comprising an upper flange underlapping the overlying row of panel units, and a lower flange overlapping the underlying row of panel units and the underlying vertical sealing strip, the flange means of each vertical sealing strip comprising a pair of side flanges overlapping respectively two horizontally adjoining panel units, and a bottom flange overlapping the underlying horizontal sealing strip.

4,614,068

EXTRUDED DOOR FRAME ASSEMBLY

Jerome M. Bergthold, 3611 Jersey Ridge Rd., Davenport, Iowa 52807

Filed Sep. 24, 1984, Ser. No. 653,611
Int. Cl.[4] E06B *1/04;* E04C *3/30*
U.S. Cl. 52—211 **14 Claims**



1. A door frame assembly, comprising a first upright member for one side of a door opening, a second upright member for the opposite side of a door opening, a top cross-piece extending between said first and second upright members at the upper

ends thereof, wherein said first upright member comprises an elongframe member, including a front end wall having a first side edge and a second side edge, an outer facing surface and an inner facing surface, a first side wall member extending in one direction from the inner surface of said front end wall at said first side edge, a second side wall member extending in said one direction from the inner surface of said front end wall at said second side edge, first slot means adjacent said first side edge on said inner facing surface side of said front end wall to receive first projecting means of a mounting stud therein, said first slot means opening in the direction toward said second side edge, said first slot means including a spaced apart side wall substantially parallel to said front end wall which terminates at one end at the said opening of said first slot means in the direction toward said second side edge and at the other end at an end wall extending therefrom substantially normal thereto in the direction toward said front end wall and terminating thereat, cam surface means to slidingly engage second projecting means of said mounting stud, said cam surface means being on said inner facing surface side of said front end wall spaced apart from said first slot means in the direction toward said second side edge, said cam surface means extending in a direction toward said inner facing surface of said first end wall and terminating at a locking recess positioned between said cam surface means and said inner facing surface side of said front end wall to receive said second projecting means of said mounting stud therein, said cam surface means facing toward said first side wall member, including said mounting stud and said first and second projecting means thereof, said first projecting means being elongated relative to said second projecting means, said first projecting means of said mounting stud for said first upright member is a projecting flange projecting outwardly a substantial distance to one side of said mounting stud, said first slot means includes a first slot formed adjacent said first side edge to receive a portion of said projecting flange therein, said projecting flange of said mounting stud being substantially parallel to said front end wall of said front upright member when received in said first slot, said second projecting means of said mounting stud is a projecting rib projecting a relatively short distance to the opposite side of said mounting stud, said cam surface means includes a snap-in locking lug extending from said inner surface of said front end wall, a first side wall of said snap-in locking lug facing said first slot formed adjacent said first side edge of said front end wall, a second side wall of said snap-in locking lug being planar and facing said second side edge of said front end wall, said planar second side wall of said locking lug being spaced apart from said second side wall member in the direction toward said first side wall member, a diagonally extending cam surface on said first side wall of said snap-in locking lug diverging from said second side wall therefof as it extends toward said inner surface of said front end wall, said locking recess being formed in said snapin locking lug and opening toward said first slot formed adjacent said first side edge, said diagonally extending cam surface terminating at said locking recess.

4,614,069

PREFABRICATED CURTAIN WALL ASSEMBLY

Shinji Tanikawa, Namerikawa, and Koichiro Nawa, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 26, 1984, Ser. No. 686,537

Claims priority, application Japan, Dec. 28, 1983, 58-199301[U]

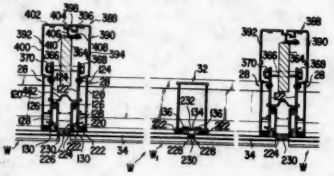
Int. Cl.[4] E04B *2/88*

U.S. Cl. 52—235 **9 Claims**

1. In a prefabricated curtain wall assembly, in combination:

(a) a row of curtain wall units each having a panel and a generally rectangular frame extending along the periphery of the panel, the frame of each curtain wall unit comprising a top frame member having a gap opening downwardly for engagingly receiving a top peripheral portion of the panel, a bottom frame member having a gap opening upwardly for engagingly receiving a bottom peripheral portion of the panel, and a pair of side frame members arranged interiorly of the opposite lateral peripheral portions of the panel;

(b) first adhesive means of relatively low elasticity for joining the pair of side frame members of the frame of each curtain wall unit to the interior surfaces of the lateral peripheral portions of the panel; and



(c) second adhesive means of greater elasticity than the first adhesive means for joining the opposed lateral edges of the panels of the horizontally adjoining curtain wall units;

(d) whereby the horizontally adjoining curtain wall units are elastically joined to one another with their side frame members concealed behind the panels as viewed from the exterior of the curtain wall assembly.

4,614,070

SUPPORT SHOE

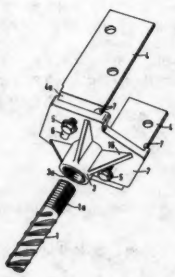
Kristoffer Idland, Lerkeveien 15, N-4300 Sandnes, Norway

Filed Feb. 3, 1984, Ser. No. 576,737

Claims priority, application Norway, Nov. 7, 1983, 834046

Int. Cl.[4] E02D *27/42*

U.S. Cl. 52—296 **2 Claims**



1. A support shoe for supporting an elongated object comprising a longitudinal anchor member in the form of a rod adapted to be embedded in a foundation in a substantially vertical position by being cast in a concrete foundation, and a fork-shaped holder/retainer member adapted to grip the object from two opposite side faces thereof, wherein a bottom end surface of the object is adapted to rest on a substantially horizontal section between vertical support plates of said fork-shaped holder/retainer member, the object being retained between said vertical support plates, and wherein said vertical support plates each has a horizontal guide and fastener part disposed at a right angle relative to each vertical plate, said horizontal guide and fastener parts being adapted to be movable in relation to each other to permit adjustment of the width of said fork-shaped holder/retainer member in order to fit the dimensions of the object, and to be retained at an adjusted width, said support shoe further comprising:

a base plate having two parallel guides formed in an upper surface thereof, one for each of said horizontal guide and fastener parts of said vertical support plates, said fork-

shaped holder/retainer member and said anchor member being detachably connected to each other; and

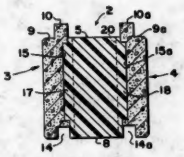
wherein two opposing edges of said base plate and a section disposed centrally between said edges are provided with upright wall sections disposed at a right angle relative to said base plate and of substantially the same height as the thickness of material of said horizontal guide and fastener parts, said upright wall sections being mutually parallel and spaced apart a distance corresponding to the width of each horizontal guide and fastener part.

4,614,071

BUILDING BLOCKS

Carl R. Sams, 1377 Catalpa St., and William G. Stivers, 52489 Butternut, both of Rochester, Mich. 48063

Filed Nov. 16, 1983, Ser. No. 552,362
Int. Cl.[4] E04C *1/40*
U.S. Cl. 52—309.12 8 Claims



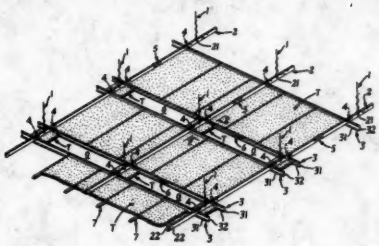
1. A building block comprising a six-sided, parallelepiped body formed of rigid, foamed resinous material having thermal insulating and fire retardant properties, said body having flat upper and lower surfaces, flat opposite ends, and laterally extending, convex projections at two opposite sides; a pair of masonry slabs each of which has an inner, concave surface and an outer surface; and means securing said slabs to said body on said opposite sides of the latter with the inner surfaces of said slabs embracing said projections and adhered to the respective opposite sides of said body, said slabs having external, parallel, bottom grooves extending the full length of the lower surface of said body and external, parallel, end grooves extending the full height of one end of said body, with the bodyportion forming part of the end and bottom groove said slabs having integral, external, parallel, top ribs extending above and along the upper surface of said body a distance corresponding to the depth of the bottom grooves adjacent the lower surface of said body, said ribs extending beyond the other end of said body a distance corresponding to the depth of the end grooves adjacent said one end of said body, said slabs having parallel, external end ribs adjacent said other end of said body projecting beyond the latter a distance corresponding to the depth of the grooves adjacent said one end of said body, the relative widths of and spacing between the end grooves and the end ribs at opposite ends of said body and the top ribs and the bottom grooves at the respective upper and lower surfaces of said body being such as to enable the end grooves at said one end of said block to accommodate and abut the end ribs at the other end of a like block and the bottom grooves at the lower surface of said block to accommodate and abut the top ribs at the upper surface of a like block, said body being located wholly within the confines of said slabs.

4,614,072

DROP-CEILING SUPPORT SYSTEM

Edison A. Price, New York, and Fulgencio V. Bengochea, East Meadow, both of N.Y., assignors to Edison Price, Inc., New York, N.Y.

Filed Jul. 25, 1985, Ser. No. 759,121
Int. Cl.[4] E04B *5/52*; E04C *3/32*
U.S. Cl. 52—484 9 Claims



1. A drop-ceiling support system for supporting ceiling tiles and lighting fixtures which comprises

hanger members attached to and extending downwardly from an original ceiling and arranged at aligned intervals along parallel rows,

inverted U-shaped carrier channel members adjoined end-to-end in parallel rows and attached to the hanger members, and

main runner members adjoined end-to-end in parallel rows transverse to the rows of carrier channel members and snap-fitted beneath and into the carrier channel members;

each main runner member has a rectangular bulbous portion extending along its upper edge,

each carrier channel member has pairs of opposed rectangular notches arranged at intervals in the lower portion of its two legs and latch springs housed at each pair of opposed rectangular notches,

the rectangular notches in the carrier channel members of a row being aligned with the rectangular notches in the carrier channel members of the other rows, and

the rectangular bulbous portions of the main runner members are snap-fitted into the latch springs housed at the opposed rectangular notches in the carrier channel members.

4,614,073

METHOD AND APPARATUS FOR PROCESSING AND PACKAGING IN BOXES TUBULAR SQUEEZABLE CONTAINERS

Ivo Argazzi, Pianoro Nuova, Italy, assignor to IMA - Industria Macchine Automatiche SpA, Ozzano Emilia, Italy

Filed May 3, 1985, Ser. No. 730,288
Claims priority, application Italy, May 9, 1984, 3455 A/84
Int. Cl.[4] B65B *7/14, 57/10*
U.S. Cl. 53—54 8 Claims

1. A method for processing and packaging in boxes squeezable preformed open-ended tubular containers for substantially viscous paste products, comprising the steps of:

(a) feeding said containers successively in a horizontal position from a hopper along a transport path traversed by each of said containers in turn to a first transfer device located along said path;

(b) positioning each of said containers vertically at said transfer device with the open end thereof facing upwardly;

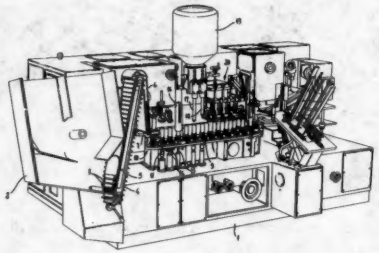
(c) inserting each of said containers vertically into a respective flexible gripping device with the open end of said containers facing upwardly;

(d) advancing said gripping devices with said containers along said path in increments into registration with at least

one filling station located along said path for injecting said paste in turn into each of said containers through the open ends thereof;

(e) further advancing said gripping devices with said filled containers along said path in increments into registration with a folding and crimping station located along said path for closing and sealing in turn the open ends of said filled containers;

(f) forming said boxes from packaging blanks and positioning



in turn each box along said path with an introduction opening thereof facing upwardly;

(g) advancing said sealed containers in increments along said path into registration with a second transfer device located along said path for inserting in turn each of said sealed containers into a respective box through the introduction opening thereof; and

(h) closing in turn the respective introduction opening of each of said boxes after the insertion therein of a sealed container.

4,614,074

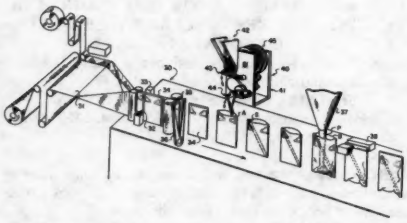
APPARATUS FOR SERIALLY INSERTING STRAWS INTO POUCHES

Jack R. Evers, Coronado, Calif., assignor to Flex Straw Limited, Delmar, Calif.

Filed Jul. 5, 1984, Ser. No. 627,854

Int. Cl.[4] B65B *61/00*

U.S. Cl. 53—128 **30 Claims**



1. An apparatus for serially inserting straws into pouches, said apparatus comprising a straw dispenser for presenting straws one at a time, an escapement means including means for picking a presented straw and moving such straw in a swinging movement in a first direction from said straw dispenser generally towards a pouch position, and stuffer means for receiving such displaced straw from said escapement means remote from said straw dispenser and including means for moving such straw in a swinging movement in a second direction into a pouch located at said pouch position.

4,614,075

PACKAGING MACHINE WITH A SUPPLY HOLDER FOR REELS

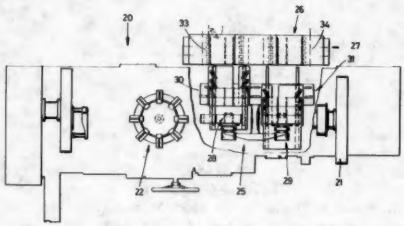
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,669

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1983, 3342204

Int. Cl.[4] B65B *41/12*

U.S. Cl. 53—168 **19 Claims**



1. A cigarette packaging machine for packaging groups of cigarettes in cuts of packaging material severed from a material strip wound on a reel, comprising:

(a) a generally cylindrically shaped reel magazine (**26**) with a plurality of reel holders (**32, 33, 34**), arranged about the circumference of the magazine which can be brought sequentially into a reel removal position, each reel holder for holding several reels placed next to each other;

(b) a consumption station (**25**) with at least two reel receiving devices (**28, 29**) for receiving reel from reel holders in their reel removal position, and

(c) a reel conveyor (**31**) movable back and forth for supplying the reels coming from the reel holders to the reel-receiver devices.

4,614,076

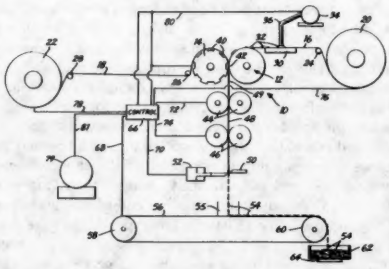
FLEXIBLE PACKAGING APPARATUS AND METHOD

John W. Rathemacher, Laurence Harbor, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 23, 1985, Ser. No. 737,306

Int. Cl.[4] B65B *31/00*

U.S. Cl. 53—433 **9 Claims**



1. Apparatus for the controlled simultaneous forming, filling, evacuating and sealing of a plurality of flexible packages containing a material with a liquid component continuously in a roller nip; characterized by

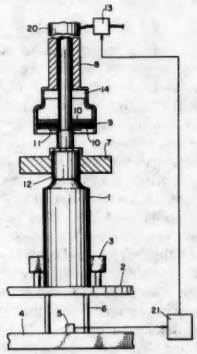
(a) a first supply roll for continuously supplying a first web for forming a first side of the flexible packages to be formed;

(b) a second supply roll for continuously supplying a second web for forming a second side of the flexible packages to be formed;
(c) a pair of heated crimp rolls positioned in cooperating engagement to continuously receive and join said first and second webs in a flexible package forming nip while simultaneously evacuating air from packages so formed in said nip;
(d) a filling material station positioned between said first supply roll and said nip for depositing a plurality of spaced apart quantities of filling material for said packages on said first web;
(e) rotary cutting means positioned after said package forming nip for continuously receiving said joined web and continuously severing said joined web into a plurality of flexible packages;
(f) first power means connected to said first and second supply rolls and said crimp rolls for the driving thereof;
(g) second power means connected to said cutting means for the driving thereof; and
(h) control means connected to said first and second power means for the controlled operation thereof.

4,614,077
AUTOMATIC TIGHTENING METHOD AND APPARATUS

Yasutami Muto, Kasukabe, and Kiyoshi Kohzuki, Tokyo, both of Japan, assignors to K.T. Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1985, Ser. No. 724,108
Int. Cl.[4] B67B *3/20*
U.S. Cl. 53—490 **7 Claims**



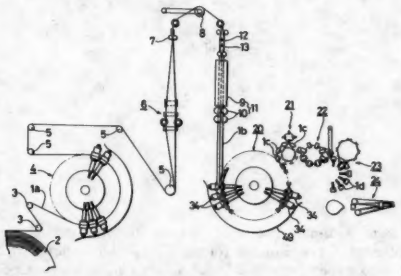
1. An automatic tightening method for screw tightening a closure component to a container component, the tightening method comprising the steps of: transferring a torque generated in a driving section for the closure component through a power transmission joint section to the container component, thereby screw-tightening the closure component to the container component by a rotational torque from said driving section; detecting a tightening torque applied to the container component; adjusting said driving section or said power transmission joint section when the tightening torque reaches a predetermined tightening torque to terminate an increase in said torque; and holding said predetermined tightening torque for a predetermined period of time, thereby obtaining said predetermined tightening, torque irrespective of the transmitted rotational torque.

3. An automatic tightening apparatus for screw-tightening a closure component, by a rotational torque from a driving section, said automatic tightening apparatus comprising a power transmission joint section for transmitting a rotational torque generated in said driving section for the closure component; a torque detector for detecting a tightening torque applied to a container component, to be closed by the closure component; and means for adjusting said driving section or said power transmission joint section to terminate an increase in said torque when a predetermined tightening torque is reached and to hold the tightening torque at said predetermined tightening torque for a predetermined period of time irrespective of the transmitted rotational torque.

4,614,078
APPARATUS FOR TRANSVERSELY SEALING PACKAGES

Seikichi Kawabe, Kanazawa, Japan, assignor to Shibuya Kogyo Co., Ltd., Kanazawa, Japan

Filed Jul. 25, 1985, Ser. No. 759,032
Claims priority, application Japan, Jul. 31, 1984, 59-162356; Sep. 14, 1984, 59-193033; Oct. 4, 1984, 59-208638; Jan. 16, 1985, 60-6344; Jan. 17, 1985, 60-5207[U]
Int. Cl.[4] B65B *9/08*
U.S. Cl. 53—551 **12 Claims**



1. An apparatus for transversely sealing packages comprising a rotatable body adapted to be continuously driven for rotation, a plurality of carrier means disposed in spaced relationship around the periphery of the rotatable body and each including an inner mold and an outer mold which are located inward and outward, respectively, as viewed in the radial direction of the rotatable body, drive means for urging the outer mold against the inner mold and for moving the outer mold to its open position which is laterally offset, as viewed in the direction of rotation, from its position where it is located radially opposite to the inner mold, a tubular member containing a filling therein being supplied to the inner mold when the outer mold is in its open position and being held between the inner mold and the outer mold which is then urged against the inner mold, a transverse seal being applied to the tubular member in a direction transverse to the direction in which it is conveyed during the time the tubular member is held between the inner and the outer mold to thereby define an enclosed package between adjacent transverse seals, the enclosed package being removed out of the inner mold in the open position of the outer mold, the carrier means being movable back and forth, as viewed in the direction of rotation of the rotatable body, and a transverse seal positioning mechanism which causes the individual carrier means to be displaced in the direction of rotation to adjust a spacing between adjacent carrier means, in which the transverse seal positioning mechanism comprises a cam member associated with each of the carrier means and operative to cause the associated carrier means to be displaced in the direction of rotation of the rotatable body in accordance with an angular position which it assumes, a cam follower coupled with the cam member to cause an angular movement thereof, a rocking cam member disposed outside the rotatable body and engageable with the cam follower as it is moved by the rotation of the rotatable member to cause a displacement of the cam follower in the radial direction of the rotatable body which in turn causes an angular movement of the cam member, and driving means for rocking cam member in the radial direction of the rotatable body to adjust a radial

displacement of the cam follower, thereby adjusting the amount of angular movement of the cam member.

4,614,079

AUTOMATIC PACKAGING SYSTEM

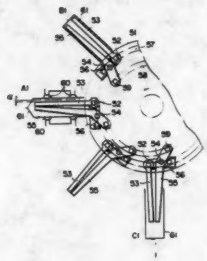
Keizo Ida, and Akihiko Goto, both of Tokyo, Japan, assignors to Toppan Printing Co., Ltd. and Kawashima Packaging Machinery Ltd., both of, Japan

Filed Jul. 26, 1984, Ser. No. 634,628

Claims priority, application Japan, Mar. 30, 1984, 59-62533; Mar. 30, 1984, 59-62534; Mar. 30, 1984, 59-62535; Mar. 30, 1984, 59-62536; Mar. 30, 1984, 59-62537; Mar. 30, 1984, 59-62538

Int. Cl.[4] B65B *43/34*

U.S. Cl. 53—563 **5 Claims**



1. In an automatic packaging system comprising a container fabricating mechanism for forming a tubular structure from laminated paper capable of heat sealing, means for marking folding guidelines for forming a rectangular-prism-shaped container, means for cutting an individual pouched container from the tubular structure, and a packaging mechanism for filling said pouched container with a filling material and sealing an open end of said pouched container; the improvement comprising:

said container fabricating mechanism comprising a rotating mandrel and at least one pair of radially arranged and pivotally mounted leading and trailing forming plates mounted on the mandrel and arranged to initially receive an unformed pouched container thereon in open condition and to release a formed container therefrom after a forming operation carried out during cyclic rotation of said mandrel and plates;

said leading and trailing forming plates each having a distal end portion for receiving a pouched container thereover and a proximal end portion pivotally mounted to the mandrel and including a guide element fixed relative to said proximal end;

first and second eccentric fixed annular guiding grooves arranged to cooperate respectively with said guide elements of said plates, said first and second annular guiding grooves each having a predetermined geometric configuration whereby movement of the leading and trailing plates and their guide elements relative to the grooves causes rotation of the plates relative to each other and to the mandrel about their pivots at predetermined locations around the rotary path of the mandrel and plates;

means for driving said leading and trailing plates and said mandrel about a rotary path with said guide elements engaging said annular grooves;

means for initially inserting a pouched container over said leading and trailing forming plates when the latter are disposed at a first location about the rotary path of the mandrel;

said grooves arranged relative to the mandrel so that, as said plates are driven relative thereto, the leading plate is rotated slightly towards the trailing plate at the location where a pouched container is initially received around said plates, and the trailing forming plate is pivoted away from said leading forming plate at a location immediately after where a pouched container is initially received around said forming plates; and so that, at the location where a pouched container is to be released from the mandrel, one of said leading or trailing forming plates is rotated slightly towards the other forming plate to freely release a pouched container thereon.

4,614,080

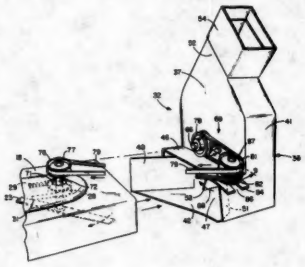
GRASS COLLECTOR BLOWER

Thomas L. Hoepfner, 98 Prairiewood Dr., and Keith A. Leistikow, 88 Prairiewood Dr., both of Fargo, N. Dak. 58103

Continuation-in-part of Ser. No. 557,233, Dec. 1, 1983, abandoned. This application Jan. 17, 1985, Ser. No. 692,657

Int. Cl.[4] A01D *34/63, 87/10*

U.S. Cl. 56—16.6 **46 Claims**



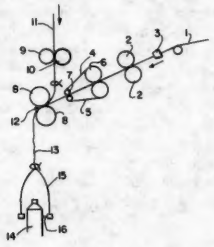
1. An apparatus for cutting grass and collecting grass clippings comprising: a tractor having an internal combustion engine, a rotary lawn mower having a generally horizontal deck mounted on the tractor, said deck having a grass clipping side discharge section having a discharge opening, a plurality of grass cutting blades located under said deck, means including upright blade shafts rotatably mounting the blades on the deck, drive means for transmitting power from the tractor engine to the blade shafts to rotate the blades whereby the blades cut grass under said deck and move grass clippings through said discharge opening, grass clippings collector means mounted on the tractor, and blower means for receiving grass clippings from said discharge opening and moving the grass clippings to the collector means, said blower means having housing with an internal chamber and an inlet opening aligned with the discharge opening, impeller means located within said chamber, a horizontal shaft rotatably mounting the impeller means on the housing for rotation about a generally horizontal axis, power transmission means drivably connecting the horizontal shaft with one upright blade shaft whereby power is transmitted from said one upright blade shaft to the impeller means to rotate the impeller means, said deck having a hole above said one blade shaft, said power transmission means including an upright shaft extension extended through said hole and secured to said one blade shaft, a generally horizontal first pulley secured to said shaft extension, a generally vertical second pulley secured to said horizontal shaft, an upright post, support means mounting the post on the housing, third and fourth pulleys rotatably mounted on the post for rotation about a common generally upright axis, said third and fourth pulleys having outer belt accommodating portions generally aligned with the plane of rotation of the second pulley, and a single endless belt trained about said first and second pulleys and engageable with said third and fourth pulleys whereby said third and fourth pulleys change the orientation of the belt from horizontal to vertical and back to horizontal as the belt travels about said first and second pulleys whereby said belt transmits power from the first pulley to the second pulley to rotate the impeller means concurrently with the rotation of the blades.

4,614,081

METHOD FOR MANUFACTURING A COTTON YARN

Ki W. Kim, Seoul, Rep. of Korea, assignor to Youngnam Textile Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 11, 1984, Ser. No. 660,006
Int. Cl.[4] D02G *3/36, 3/38*
U.S. Cl. 57—12 **8 Claims**



1. A method for manufacturing a cotton core yarn which comprises:

introducing a tension into a core yarn, and

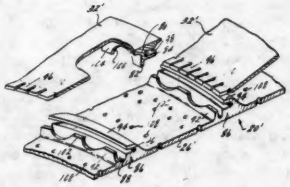
bringing a cotton yarn together with the core yarn prior to being passed through opposing roller means, said core yarn having a higher tension than that of the cotton yarn and said cotton yarn being supplied to the core yarn at opposing roller means at a higher speed than that of the core yarn, said tension being applied to the core yarn within the range of about 1.5 to 4.0 g/d and the cotton yarn being supplied at a speed to be combined with the core yarn in a ratio of core yarn to the cotton yarn of about 1:1.02 to 1:1.60 whereby the core yarn forms the center fiber and the cotton yarn uniformly covers the surface of the core yarn.

4,614,082

COMBUSTION CHAMBER CONSTRUCTION

Albert P. Sterman; Thomas G. Wakeman, and Jesse J. Williams, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 19, 1972, Ser. No. 316,530
The portion of the term of this patent subsequent to Nov. 6, 2001, has been disclaimed.
Int. Cl.[4] F02C *7/20*
U.S. Cl. 60—39.32 **12 Claims**



1. A combustion chamber for use in gas turbine engines, the chamber comprising:

an inlet for receiving air and fuel to be burned;

an outlet for expelling products of combustion;

high strength structural frame means disposed between the inlet and the outlet for supporting mechanical forces associated with the chamber;

liner means cooperating with the frame and defining a combustion zone, said liner means including a plurality of panels of high temperature materials;

circumferential mounting means for positioning said panels laterally with respect to one another;

axial mounting means for positioning said panels axially with respect to said frame means;

wherein said circumferential mounting means includes frictionally slideable engaging means cooperating with adjacent pairs of said panels;

wherein said frictionally slideable engaging means includes a projection disposed on one lateral edge of preselected first of said panels, and a mating slot disposed on an opposed edge of preselected second of said panels disposed adjacent said first panels;

wherein said axial mounting means includes;

first radially extending shoulder means cooperating with preselected of said panels,

second radially extending shoulder means cooperating with said frame means, and engaging said first shoulder means, and

a first axially extending flange carried by said first shoulder means; and

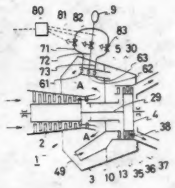
a second axially extending flange carried by said second shoulder means, said second flange underlying and interlocking with said first flange.

4,614,083

GAS TURBINE

Kiyomi Teshima, Okayama; Yukimasa Kajitani, Tamano; Kazuo Takeya, Kawasaki, and Takuya Miyagawa, Kobe, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 13, 1985, Ser. No. 711,337
Claims priority, application Japan, Apr. 6, 1984, 59-67525; Apr. 6, 1984, 59-67526
Int. Cl.[4] F02C *7/00*
U.S. Cl. 60—39.53 **3 Claims**

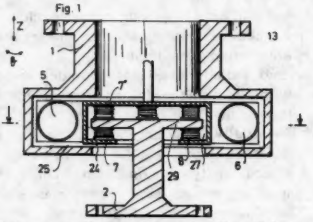


1. A gas turbine comprising a compressor, a turbine, a turbine rotor, a plurality of combustors radially arranged around said rotor in a combustion chamber encased by a turbine casing, wherein each of said combustion chambers is internally divided along its longitudinal length by a partition wall disposed radially on a boundary between a combustor part and a transition piece part of each of said combustors so as to form a cooling air chamber axially disposed on the side of said transition piece part, said partition wall being provided therethrough with a number of longitudinally extending cylindrical air cooling tubes arranged radially around said rotor, each of said cylindrical air cooling tubes being in communication with said combustion chamber and said cooling air chamber with a major portion of the length thereof projecting in said combustion chamber, and further being provided with at least one water jetting nozzle; said turbine casing having secured thereto a turbine blade ring, having a plurality of stator blades secured thereto, and formed with an air passage bore therein communicating said cooling air chamber with the interior of said stator blades secured to said turbine blade ring; said transition piece part being provided with air passage holes for communicating the interior thereof with said cooling air chamber.

4,614,084
LINK DEVICE WITH A PLURALITY OF FREEDOM DEGREES

Jean Clot, Saint-Orens, and Jean Falipou, Escalquens, both of France, assignors to Centre National de la Recherche Scientifique (C.N.R.S.), Paris, France

Filed Aug. 3, 1984, Ser. No. 641,964
Claims priority, application France, Dec. 17, 1982, 8221389
Int. Cl.[4] B65J *17/02*
U.S. Cl. 60—325 **15 Claims**



1. A mobile link or coupling having a plurality of degrees of freedom, between a supporting element and a supported element, where the supported element may be moved with respect to the supporting element, comprising:

a bearing framework (1) adapted to be fixed on the supporting element and a mobile framework (2) adapted to allow fastening the supported element;

a plurality of flexible jack means (3, 3', 4, 4', 5, 5', 6, 6', 7, 7', 8, 8', 9, 9', 30, 31, 32) each comprising a deforming wall (10) extending about a longitudinal axis (11), and rigid fastening walls (12) located at each end of said deforming wall (10), said flexible jack means being arranged between the bearing framework (1) and the mobile framework (2) so as to keep said mobile framework (2) in a position with respect to said bearing framework (1) according to the set of deformation states of said flexible jack means,

remote control means (13) for said flexible jack means, said remote control means (13) including a variable-capacity reservoir associated with and connected to each of said flexible jack means and forming with said flexible jack means a closed fluid circuit, said remote control means (13) being adapted to impart to the set of variable-capacity reservoirs capacities which determine a set of deformation states of the flexible jack means for achieving the desired position of the mobile framework (2),

each of said variable-capacity reservoirs comprising at least one deforming-wall element (16, 17, 18, 19, 20, 22) including means (15, 21, 23) for driving said deforming wall for enabling a change in reservoir capacity, and

each flexible jack means including means connected to said remote control means for measuring the deformation state and for providing a closed-loop adjustment of the desired displacement of the mobile framework (2) with respect to the bearing framework (1).

4,614,085
GAS ENGINE

Peter Neukomm, Wettingen, Switzerland, assignor to PEWA Technic AG, Dietikon, Switzerland

Filed Jan. 15, 1985, Ser. No. 691,691
Claims priority, application Switzerland, Jan. 25, 1984, 316/84
Int. Cl.[4] F16D *31/02*
U.S. Cl. 60—370 **6 Claims**

1. A gas engine, comprising:

a regulatable gas inlet valve having an inlet side;

a substantially cylindrical expansion chamber closable by said regulatable gas inlet valve;

a reciprocatable piston arranged within said expansion chamber;

a pressurized gas container;

a gas supply conduit leading from said pressurized gas container to said gas inlet valve;

an air channel opening to ambient air;

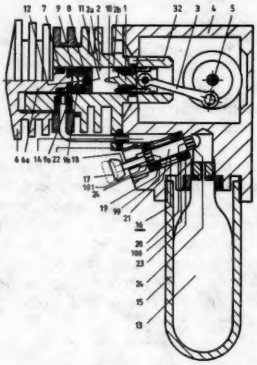
at least one shut-off device having a start position and an operational position and containing at least one valve component;

said at least one shut-off device connecting said inlet side of said gas inlet valve with said air channel and obturating said pressurized gas container when in said start position;

said at least one shut-off device obturating said air channel and clearing said gas supply conduit when in said operational position;

said at least one shut-off device comprising a first valve component for connecting said inlet side of said gas inlet valve with said air channel when in said start position and for obturating said pressurized gas container when in said operational position;

said at least one shut-off device comprising a second valve component for obturating said pressurized gas container



when in said start position and for clearing said gas supply conduit when in said operational position;

said at least one shut-off device defining a manifold shut-off devece;

said first valve component comprising a first valve closure component;

said second valve component comprising a second valve closure component connected with said first valve closure component for obturating said air channel when in said operational position;

said second valve closure component acting as a check valve and maintaining both of said first valve closure component and said second valve closure component under said pressure prevailing in said pressurized gas container when in said operational position;

said pressure exerting a force on said chack valve; and

said first valve closure component and said second valve closure component being capable of being externally pushed against said force exerted on said check valve from said operational position into said start position.

4,614,086
EXHAUST POWERED DRIVE SHAFT TORQUE ENHANCER

Andrew B. Koch, Las Vegas, Nev., assignor to Energy Modifications Enterprises, Inc., Las Vegas, Nev.

Filed Oct. 29, 1984, Ser. No. 666,205
Int. Cl.[4] F02G *3/00;* **F02B** *37/00*
U.S. Cl. 60—624 **12 Claims**

1. In a power producing combination including an internal combustion engine and a mounting frame therefor, and power transmission means including rotating drive shaft means con-

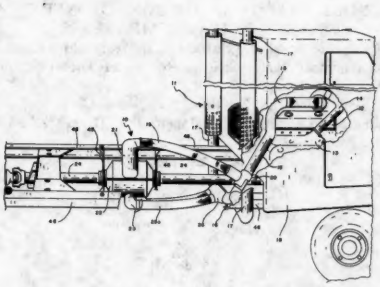
nected to the engine, the improvement being a drive shaft torque enhancing device, said device comprising:

a multiplicity of blades secured to the drive shaft, equally spaced therearound, each generally lying in a plane containing the axis of the drive shaft;

torque enhancer feed duct means for selectively directing a stream of exhaust gases from the engine to impact against the blades to impart torque to the drive shaft; and wherein

the power producing combination is used in a vehicle, said vehicle having braking means including a brake pedal;

said power producing combination further comprising torque enhancer disengagement means responsive to motion of the brake pedal, means for adjusting the stream of exhaust gases from the feed duct for efficient torque producing impingement thereof upon the blades, a torque enhancer housing to enclose the blades, adapted for attachment to the frame, and having an exhaust gas inlet connected with the torque enhancer feed duct means and positioned to direct the exhaust gas stream upon the blades, an exhaust gas outlet, and outlet duct means connected to the exhaust gas outlet, wherein the exhaust gas stream adjusting means comprises a baffle pivotally mounted within the exhaust gas inlet and an externally operable set screw for adjusting the pivoted position of



the baffle to deflect the exhaust gas stream away from the drive shaft the desired amount from full impingement upon the blades, the torque enhancer feed duct means being junctioned with the engine exhaust gas ducting means, and further comprising a two-position valve at said junction for selectively directing the exhaust gases from the engine to the atmosphere or to the torque enhancer feed duct; wherein the brake pedal responsive means comprises;

spring means urging the two-position valve to the position directing the exhaust gases to the atmosphere;

air cylinder and ram means for forcing the two-position valve against the spring to the position directing the exhaust gases into the torque enhancer feed duct;

a compressed air storage tank;

compressed air conduit means connecting the air tank with the air cylinder;

manual valve means in the air conduit for controlling the flow of air to the air cylinder;

bleed valve means in the air conduit, adapted to release the compressed air from the conduit and the air cylinder; and

means automatically actuating the bleed valve means when the operator brakes the vehicle by use of the vehicle brake pedal.

4,614,087

APPARATUS FOR ALARMING ABNORMAL COOLANT IN SPACE COOLING CYCLE

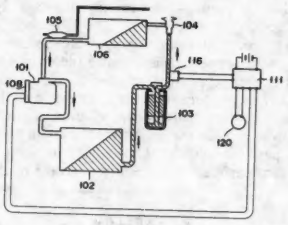
Hiroyasu Nadamoto, Mitaka, and Koichi Yoinara, Sano, both of Japan, assignors to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1984, Ser. No. 637,717

Claims priority, application Japan, Aug. 9, 1983, 58-144393; Aug. 31, 1983, 58-159720

Int. Cl.[4] F25B *49/00*

U.S. Cl. 62—126 **9 Claims**



1. An apparatus for alarming abnormal coolant in a space cooling cycle, comprising a compressor, a coolant passage for guiding high-pressure side liquid coolant in said space cooling cycle, a sensor disposed in said coolant passage and provided with a movable part having an operating fluid sealed therein and adapted to be operated by the difference of the pressure of said operating fluid and that of said liquid coolant, and an alarm-actuating switch disposed in said coolant passage and interlocked with the movable part, and said operating fluid having higher saturated pressure than the saturated pressure of said coolant and possessing an ability to operate said switch when the extent of subcool of said coolant exceeds a prescribed level and the pressure of the coolant exceeds the pressure of said operating liquid and when the pressure of the coolant exceeds the pressure under which said operating fluid is wholly in a gasified state.

4,614,088

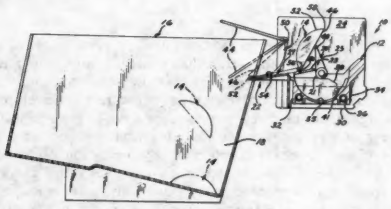
ICE PIECE EJECTION MECHANISM FOR ICEMAKER

Robert B. Brooks, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 6, 1985, Ser. No. 741,844

Int. Cl.[4] F25C *1/04, 5/08*

U.S. Cl. 62—137 **8 Claims**



1. An icemaker comprising:

a freezer mold having a plurality of partitioned walls disposed within the mold to define a plurality of cavities in which water is to be frozen to form ice pieces having a edge portion,

means for ejecting the ice pieces from the mold including a rotating ejector with spaced projections and a longitudinal axis in a horizontal plane for rotatively moving the ice pieces to above the cavities,

a relatively flat stripper member inclined downwardly in a

direction away from the mold and disposed longitudinally along one side of the mold and having a portion with a free end extending outwardly from said one side of the mold and a portion extending above the cavities, said portion above the cavities having tooth shaped projections spaced from each other a distance sufficient to allow the projections of the ejector to pass therebetween during its rotational movement and having a longitudinal upwardly depending ridge located between the tooth shaped projections and the portion extending outwardly from said one side of the mold and in substantially the same horizontal plane as the longitudinal axis of the rotating ejector,

means to continue rotating the ejector in the same direction and moving the ice pieces onto the stripper member such that the edge portion of the ice pieces engage the upwardly depending ridge and are retained thereby, and

means to continue rotating the ejector in the same direction to pivot the ice pieces upwardly about the edge portion and past the vertical whereupon the ice pieces tuble off the stripper member laterally outward of the mold.

4,614,089

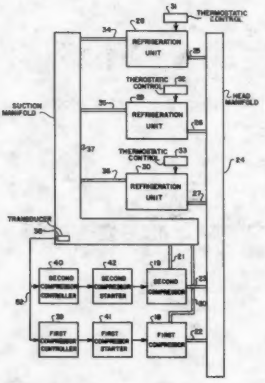
CONTROLLED REFRIGERATION SYSTEM

James M. Dorsey, Baltimore, Md., assignor to General Services Engineering, Inc., Baltimore, Md.

Filed Mar. 19, 1985, Ser. No. 713,617

Int. Cl.[4] F25B *1/00*

U.S. Cl. 62—158 **6 Claims**



1. A controlled refrigeration system comprising at least one compressor controller, transducer means for developing a signal representing refrigerant pressure, means responsive to the signal representing refrigerant pressure for developing a first digital, cut-in signal, means responsive to the signal representing refrigerant pressure for developing a second digital, cut-out signal, means responsive to application of power to said controller for developing a third digital signal indicative of expiration of a predetermined power-up delay period, means responsive to a signal representing deenergization of a refrigerant compressor for developing a fourth digital signal indicative of expiration of a predetermined down-time delay, and circuit means for developing a compressor-energizing control output in response to contemporaneous presence of the third digital signal, the fourth digital signal and the first digital signal, and for developing a compressor-deenergizing control output in response to contemporaneous presence of the third digital, the fourth digital signal and the second digital signal, wherein said circiut means for developing the compressor-energizing and compressor-deenergizing control outputs comprises logic circuit means, wherein said logic circuit means comprises a first AND gate having an output terminal, its two input terminals being coupled respectively to receive the third digital signal and the fourth digital signal and a second AND gate having an output terminal, its first input terminal being coupled to receive a digital signal from said output terminal of said first AND gate, including a source of clock pulses; and OR gate means coupled to receive the first digital, cut-in signal and the second digital, cut-out signal for producing a digital data output signal upon the occurrence of either the digital, cut-in signal or the digital, cut-out signal; a counter having an output terminal, a clock input terminal coupled to receive the clock pulses and an enabling input terminal coupled to receive the digital data output signal from said OR gate means; a further AND gate having an output terminal, one of its input terminals being coupled to receive the first digital, cut-in control signal and its second input terminal being coupled to said output terminal of said counter to receive a digital output signal therefrom which appears upon expiration of a predetermined count; and an additional AND gate having an output terminal, one of its input terminals being coupled to receive the second digital, cut-out control signal and its second input terminal being coupled to said output terminal of said counter to receive the digital output signal therefrom which appears upon expiration of a predetermined count.

4,614,090

OUTDOOR UNIT OF AN AIR CONDITIONER OF AN ENGINE HEAT PUMP TYPE

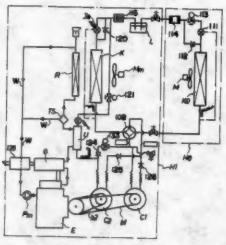
Teruji Kaneko; Toshihiko Kawabe, and Moriyoshi Awasaka, all of Chayamachi, Japan, assignors to Yanmar Diesel Engine Co. Ltd., Osaka, Japan

Filed Jan. 27, 1986, Ser. No. 823,043

Claims priority, application Japan, Jan. 31, 1985, 60-15503; Oct. 8, 1985, 60-224523

Int. Cl.[4] G05D *23/32*

U.S. Cl. 62—158 **6 Claims**



1. An outdoor unit of an air conditioner of an engine heat pump type comprising an engine; first and second compressors driven by the engine and having substantially same capacity and heat exchangers for the compressors, said heat exchanger for the first compressor being adapted to utilize an atmosphere as a heat source in a heating operation, said heat exchanger for the second compressor being adapted to utilize a waste heat of the engine as a heat source in the heating operation, a rotation speed of the second compressor being set smaller than that of the first compressor in the heating operation, only the second compressor is adapted to operate in a defrosting operation for the heating operation while utilizing the waste heat of the engine as the heat source, said compressors being adapted to operate in a cooling operation and a rotation speed of the engine and a number of the compressors to be operated being controlled so as to control a cooling capacity in the cooling operation.

4,614,091

PROCESS AND DEVICE FOR COOLING IN CONTAINERS

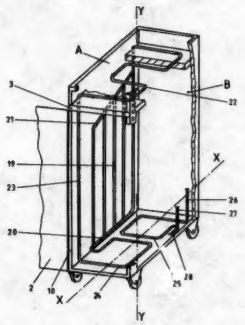
Martin Frank, Frankenforster Strasse 8, 5060 Berg. Gladbach 1, and Klaus Plassmeier, Vordersten Büchel 61, 5064 Rösrath (Hoffnugsthal), both of Fed. Rep. of Germany

Filed May 13, 1985, Ser. No. 733,571

Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420256

Int. Cl.[4] F25D *3/12*

U.S. Cl. 62—384 8 Claims



1. A cooling container comprising a housing having vertical side walls, a top, and a bottom;

a heat transfer circuit having vertical elements and horizontal elements, the vertical and horizontal elements having a cooling fluid therein;

solid carbon dioxide in direct thermal contact with the horizontal element for transferring heat thereto to condense the fluid in the heat transfer circuit;

the vertical element having branch pipes positioned at an angle to the vertical element to transfer heat from the articles to be cooled;

whereby a thermosyphonic flow of cooling fluid is established.

4,614,092

REFRIGERATOR WITH A CLOSEABLE REFRIGERATING COMPARTMENT

Dal W. Kim, Kyungnam; Kyung H Kim, Changwon, and Seon H. Kim, Kyungnam, all of Rep. of Korea, assignors to Gold Star Company, Ltd., Seoul, Rep. of Korea

Filed Jul. 11, 1983, Ser. No. 512,703

Claims priority, application Rep. of Korea, Jul. 12, 1982, 5478/82[U]; Jul. 12, 1982, 5479/82[U]

Int. Cl.[4] F25D *17/04*

U.S. Cl. 62—408 1 Claim

1. A refrigerator including a temperature-controlling thermostat and an evaporator comprising:

(a) a freezing compartment having said temperature-controlling thermostat therein and being able to be used as a refrigerating compartment,

(b) a refrigerating compartment positioned below said freezing compartment,

(c) cooling-air incoming passages connected to each of said compartments at inlets for supplying cooling air from said evaporator into each of said compartments,

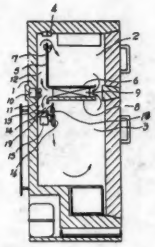
(d) a cooling-air flow regulator, located at the refrigerating compartment inlet of the cooling-air incoming passage, said regulator adjustably to be open for permitting the flow of cooling air and adjustable to be completely closed for preventing the flow of cooling air into said refrigerating compartment, said regulator including:

(i) a regulator body,

(ii) a flexible actuating member which is mounted on said regulator body,

(iii) a support lever rotatably mounted by pivot pin on said regulator body in front of said actuating member and having a curved portion,

(iv) a shutter which is attached to and supported by a top end of said support lever, said shutter disposed rotatably in said refrigerating compartment and operated by said support lever to close or open said refrigerating compartment inlet for increasing or decreasing the flow of cooling air through the cooling-air incoming passage,



(v) a control member which is rotatably connected to said regulator body, said member having indications of cooling extent, an indication of complete closing position for said shutter on the front face thereof, having a cam device being formed by a top plane in the opposite side of said indication of complete closing position and a sloped surface annularly extended from one side of said top plane to the other side of said top plane, so that said control member operates to urge rearwardly the curved portion of said support lever by said cam device and to fix said support lever at the position for complete closing of said shutter.

4,614,093

METHOD OF STARTING AND/OR REGENERATING A CRYOPUMP AND A CRYOPUMP THEREFOR

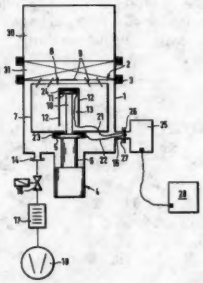
Werner Bächler, Rösrath; Hans-Joachim Forth, Cologne, and Hans-Hermann Klein, Rösrath, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 18, 1985, Ser. No. 788,769

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1985, 3512614

Int. Cl.[4] B01D *8/00*

U.S. Cl. 62—55.5 17 Claims



1. A method for one of starting and regenerating a cryopump having a housing operatively connectable to a space to

be evacuated with the cryopump, a two-stage refrigerator in the housing, and means providing a pumping surface area in thermal communication with each stage of the refrigerator for at least one of gas-pumping adsorption and absorption thereon when the refrigerator is operated, comprising:

evacuating the housing to a pressure of from about 1 to about 10^{-3} mbar and heating at least the pumping surface area of the second stage of the refrigerator at least just before the cryopump is operatively connected to the space to be evacuated with the cryopump at least sufficiently to prevent gas adsorption and absorption thereon.

4,614,094

COVERING FABRIC FOR A DAMPING ROLLER OF AN OFFSET PRINTING MACHINE

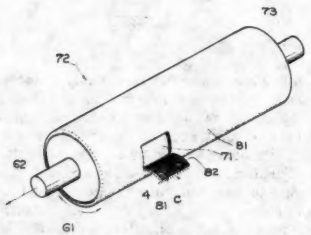
Kazumasa Kakihana, Nara, and Hiroshi Nishiwaki, Izumi, both of Japan, assignors to Techno Roll Co., Ltd., Japan

Filed Jul. 15, 1983, Ser. No. 514,240

Claims priority, application Japan, Jul. 27, 1982, 57-131051

Int. Cl.[4] D04B *1/04, 9/12, 9/16*

U.S. Cl. 66—170 **6 Claims**



1. A cylindrical, knitted damping roller cover having a circumference, comprising:

at least one ground yarn comprised of water absorbable yarn forming a plurality of plain stitch base knit loops extending adjacently in adjacent parallel knitting courses, said courses being formed in a direction of said circumference, said base knit loops from said adjacent parallel courses being chained one with the other;

at least one pile yarn comprised of water absorbable yarn forming piles standing up at the region of chaining of said base knit loops; and

at least one annex yarn comprised of water shrinkable yarn having a higher shrinking ratio than said ground yarn threaded between said base knit loops extending substantially straightly in said direction of said courses, said annex yarn passing over a first base knit loop in a course passing downwardly between said first base knit loop and an adjacent base knit loop in the same course to pass thereunder and passing upwardly between said adjacent base knit loop and a next adjacent base knit loop in said course to pass over another base knit loop.

4,614,095

METHOD AND APPARATUS FOR OPERATING WARP KNITTING MACHINES

Itzchak Porat, Leeds, United Kingdom, assignor to Guilford Mills, Inc., Greensboro, N.C.

Filed Mar. 11, 1985, Ser. No. 710,008

Claims priority, application United Kingdom, Mar. 13, 1984, 8406570

Int. Cl.[4] D04B *23/00*

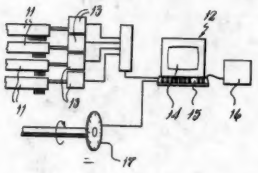
U.S. Cl. 66—207 **11 Claims**

6. Apparatus for operating the guide bars of a warp knitting machine to feed yarn to the needles thereof, said apparatus comprising:

(a) actuator means for causing lapping movement of said guide bars in response to electronic operating signals transmitted to said actuator means;

(b) computer control means including:

(i) progamming means for programming said computer control means to distinguish between predetermined permitted lapping movements for said guide bars and prohibited lapping movements for said guide bars;



(ii) input means for feeding input guide bar lapping movement instructions into said computer means; and

(iii) means for gnerating said operating electronic signals and transmitting said signals to said actuator means only when said input guide bar lapping movement instruction correspond to said predetermined permitted lapping movements for said guide bar.

4,614,096

SYSTEM FOR THE CONTINUOUS AND OPEN-WIDTH WASHING OF A FABRIC

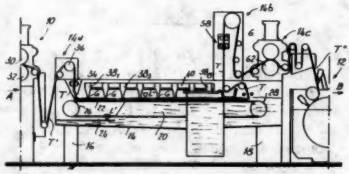
Mario Beretta, Gerenzano, Italy, assignor to Arioli & C S.R.L., Gerenzano, Italy

Continuation of Ser. No. 190,563, Sep. 25, 1980, abandoned. This application Oct. 29, 1984, Ser. No. 665,921

Claims priority, application Italy, Oct. 1, 1979, 26161 A/79

Int. Cl.[4] D06F *1/02, 3/20*

U.S. Cl. 68—22 R **3 Claims**



1. An improved system for the continuous and open-width washing, after the printing and/or purging and bleaching, of a fabric, which comprises permeable means for conveying said fabric through a treating and/or processing vessel under thermally controlled conditions, a bath having an inlet portion and chemical agents effective to provide the treating and/or processing operations enclosed in said vessel, means for recirculating the liquid in said bath, means for introducing the liquid into the bath in the form of jets above said fabric, said means for recirculating the liquid comprising a continuous slot nozzle assembly forming a recirculating circuit; said permeable conveying means including a liquid permeable circulating conveyor belt; and including means for introducing the fabric at a level above the inlet portion of said bath and means for supplying said fabric with a speed much greater than the advancing speed of said conveyor means, whereby laps in said fabric are formed; said means for introducing the liquid into the bath in the form of jets above said fabric including a plurality of jet

emitting devices each supplied with said liquid and disposed to have a liquid flow rate between 10 and 40 cubic meters per hour at a pressure between 1 and 5 meters water column, and positioned above said conveyor belt in substantially unobstructed relation to the laps of said fabric carried on the conveyor belt, each jet emitting device emitting a liquid blade type jet extending transversely to the movement path of the conveyor belt, the liquid free surface of the bath above the fabric not exceeding a few centimeters.

4,614,097

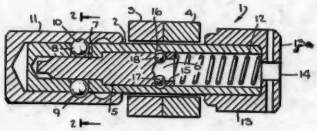
INTERNAL LOCKING MECHANISM FOR BARREL TYPE LOCKS

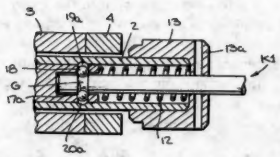
John A. Signorelli, 2150 E. 29th St., Brooklyn, N.Y. 11229

Continuation-in-part of Ser. No. 519,999, Aug. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 232,137, Apr. 27, 1981, abandoned. This application Jan. 30, 1986, Ser. No. 824,304

Int. Cl.[4] E05B *67/36*

U.S. Cl. 70—34 **24 Claims**





1. A plunger type lock comprising a barrel with an axial bore, locking members on said barrel and extensible outwardly from said barrel, plunger means movable axially within said bore and in a first axial, locking position thereof, holding the locking members in extended position, said plunger means in a second axial, unlocking position permitting the locking members to move inwardly of said barrel, means biassing said plunger means into its first axial position, and means for preventing axial movement of said plunger means into its second axial position comprising at least one further locking member carried by said plunger means and movable inwardly and outwardly of said plunger means, said barrel having stop means engageable with said further locking member when said plunger means is in its first axial position and said further locking member extends outwardly of said plunger means, whereby displacement of said further locking member outwardly of said plunger means with an implement when said plunger means is in its locking position causes said further locking member to engage said stop means and prevents axial movement of said plunger means toward its second axial position.

4,614,098

METHOD OF AND APPARATUS FOR CONTROLLING LOAD DISTRIBUTION FOR A CONTINUOUS ROLLING MILL

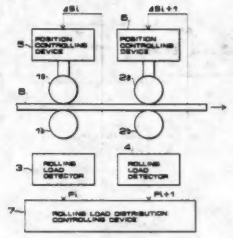
Yoshikazu Kotera, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 649,679

Claims priority, application Japan, Sep. 13, 1983, 58-169691

Int. Cl.[4] B21B *37/12*

U.S. Cl. 72—8 **2 Claims**



1. A load distribution controlling method for a continuous rolling mill for rolling plate material, comprising the steps of:

(a) detecting rolling load amounts at a given pair of adjacent stands of said continuous rolling mill;

(b) judging whether the respective rolling load ratios coincide with a load distribution ratio set value or not by comparing the respective magnitudes with each other;

(c) calculating, if coincidence is not found, a change value Δhi^L of the plate thickness on the exit side of the upstream stand necessary for making said rolling load amounts coincide with the load distribution ratio set value;

(d) changing the plate thickness at the exit side of the upstream stand by correcting the rolling reduction position at the upstream stand, based on $\Delta S_i=(m_i+q_i/m_i)\cdot\Delta h_i^L$ (where ΔS_i is rolling reduction position of the ith stand, q_i is the plastic hardness of the material being rolled, Δh_i^L is the change value of the plate thickness at the ith stand); and

(e) correcting the rolling reduction position at said downstream stand, based on $\Delta S_i+1=(q_{i+1}/m_{i+1})\cdot\Delta h^{iL}$ at the time when the plate thickness change point reaches the downstream stand.

4,614,099

ROLLING MILL

Leland E. Coulter, New Canaan, Conn., assignor to Teledyne, Inc., New Canaan, Conn.

Filed Jul. 27, 1984, Ser. No. 635,055

Int. Cl.[4] B21B *37/06, 35/00*

U.S. Cl. 72—29 **17 Claims**

11. A rolling mill for reducing the thickness of a workpiece, comprising:

a mill housing;

upper and lower reducing rolls mounted within the mill housing for rotation about their axes and for movement toward each other to engage the workpiece therebetween;

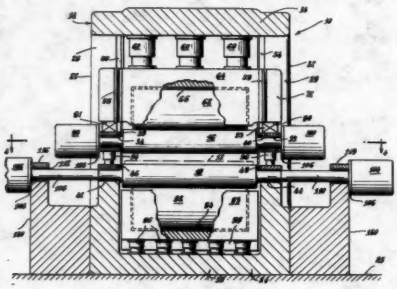
actuating means for selectively forcing the upper reducing roll downward toward the lower reducing roll to effect a separation force on the workpiece placed therebetween;

four DC motors, one of which is directly connected to each end of each of the upper and lower reducing rolls for counter-rotating the upper and lower reducing rolls to drive the workpiece therebetween;

an optical encoder connected to each motor for producing a predetermined number of data pulses per revolution;

a master clock for producing pulses at a predetermined frequency corresponding to a desired rotational speed of the reducing rolls; and

control means for adjusting the voltage to at least one of the motors so as to achieve and maintain synchronization of the encoder pulses with the master clock pulses within a close tolerance for establishing and maintaining synchro-



nization of the rotational speed of each motor and their associated driven rolls for maintaining one end of each reducing roll at substantially the same speed as the opposite end thereof, thereby reducing torsion of the said one end relative to said opposite end thereof.

4,614,100

SYSTEM FOR THE MONITORING AND CONTROL OF FLOW OF PARTICULATE MATERIAL IN IMPACT TREATMENT EQUIPMENT

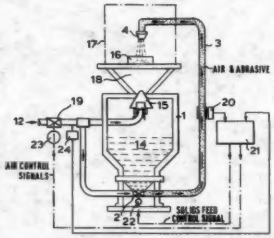
Robert G. Green, Todmorden; Mark A. Browne, West Didsbury; Richard J. Deloughry, Stretford, and Eric J. Hill, Slough, all of England, assignors to BTR plc, London, England

Filed Sep. 13, 1984, Ser. No. 650,360

Claims priority, application United Kingdom, Sep. 14, 1983, 8324553

Int. Cl.[4] B24C *7/00*

U.S. Cl. 72—53 **9 Claims**



1. In an apparatus including a nozzle, a compressed gas supply line, a source of particulate material, duct means having an inlet connected to said supply line and having an outlet connected to said nozzle, said supply line, said duct means and said nozzle defining a gas stream path for providing a stream of gas, and metering means connected to said duct means and particulate material source for feeding said particulate material into said gas stream for entraining said material in said gas stream, a path between said metering means and said nozzle defining a particulate material path, the improvement therein comprising;

first monitoring means connected to said gas stream path for monitoring the flow density of the particulate material,

second monitoring means connected to said gas stream path for monitoring the flow velocity of said material, and

control means comprising a first control loop connected to said flow density monitoring means and first flow control means connected to said first control loop to correct automatically the flow density on detection of a predetermined deviation of the monitored flow density from a first preset value, and a second control loop connected to said flow velocity monitoring means and second flow control means connected to said second control loop to correct automatically the flow velocity on detection of a predetermined deviation of the monitored flow velocity from a second preset value.

8. A method of impact peening a work piece, comprising the steps of;

conveying particulate peening material in a gas stream to a nozzle through which it is accelerated onto the work piece,

monitoring the material flow density,

monitoring the flow velocity,

comparing the monitored flow density during peening with a first predetermined value,

comparing the monitored flow velocity during peening with a second predetermined value, and

separately controlling the flow density and flow velocity during peening to maintain their respective values within respective predetermined ranges.

4,614,101

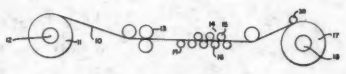
METHOD OF REWINDING SLIT METAL STRANDS

Augustine A. Fornataro, Callery, Pa., assignor to Herr-Voss Corporation, Callery, Pa.

Filed Dec. 1, 1981, Ser. No. 326,187

Int. Cl.[4] B21D *1/02*

U.S. Cl. 72—160 **5 Claims**



1. The method of coiling into uniformly tight coils multiple metal strands slit from strip varying in thickness from edge to center comprising working the multiple strands selectively by reverse bending between the same rolls, so as to reduce and elongate the thicker strands more than the thinner strands and then coiling the strands in multiple at the same rotational speed.

4,614,102

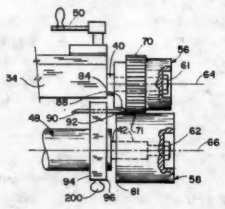
SEAM LOCK SPREADER MOUNTED ON LOCK-SEAM MACHINE BASE

Richard A. Kaar, 551 W. 1st St., Wahoo, Nebr. 68066

Filed Jul. 22, 1985, Ser. No. 757,722

Int. Cl.[4] B21B *5/08*

U.S. Cl. 72—178 **1 Claim**



1. A seam lock spreader for spreading apart the wings of the elongated receiving pocket in a seam lock comprising: a main frame, upper and lower shafts rotatably mounted on and projecting to one side of said main frame, a crank handle at the

opposite end of said main frame, means drivably connecting said crank handle and said shaft whereby said crank handle drives said shaft, upper and lower rollers on said shafts respectively whereby said upper and lower rollers rotate in opposite directions about upper and lower axes

whereby said rollers are closely spaced for pressing against a work-piece of sheet metal passing therebetween, one of said rollers having an outermost portion having an exterior of substantially cylindrical shape, said one roller having a section of lesser diameter disposed between said outermost portion and a frame side of said one roller for creating a space for receiving the seam portion of a workpiece therein, the other of said rollers having a shape permitting said workpiece seam portion to be received in said space at times when the exterior of said other roller is close enough to said one roller that the sheet metal workpiece disposed between the two rollers will be driven tangentially of said rollers, a spreading wheel having an exterior marginal edge portion partially disposed in said spreading wheel receiving space,

a spreading wheel carrier having a vertical axle rotatably carrying said spreading wheel for rotation only about a vertical axis, said spreading wheel having its circular marginal portion tapering as seen in side elevation to a lesser thickness as its edge is approached from its axis, said main frame having a fixed horizontally elongated spindle surrounding said lower shaft and having exterior surfaces parallel with said roller axes, said spreading wheel carrier having a spindle-receiving opening therethrough and receiving said spindle so that said carrier is slidable along said spindle and adjustably positionable along said spindle, means for fixing said carrier in a desired position on said spindle, at least one of said rollers being knurled on that portion thereof which is spaced farthest from the respective axis.

4,614,103

ROLLING MILL

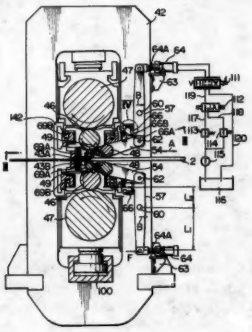
Michimasa Takagi; Toshiyuki Kajiwara, and Takao Sakanaka, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,255

Claims priority, application Japan, Dec. 29, 1983, 58-247684

Int. Cl.[4] B21B *13/14, 29/00*

U.S. Cl. 72—242 **16 Claims**



9. A rolling mill of the type having a housing, an upper work roll and a lower work roll adapted to cooperate in rolling a material therebetween, supporting rolls disposed at the upper and lower sides of said upper and lower work rolls such as to vertically support and drive said work rolls, horizontal supporting rolls disposed at a lateral side of said work rolls so as to support said work rolls from the lateral side in the direction of path of the rolled material, and horizontal back-up rolls disposed at a laterial side of said horizontal supporting rolls so as to back-up said horizontal supporting rolls, said rolling mill comprising:

a holding means for rotatably holding said horizontal supporting rolls and said horizontal back-up rolls at both axial ends of these rolls;

a first driving means provided on said housing and mechanically connected to said holding means, said first driving means being adapted to cause a movement of said holding means in the direction of the path of movement of the material to be rolled and to impart to said work rolls desired pressing force acting in the direction of the path of the rolled material;

a second driving means provided on said housing and adapted to be connected to a restraining means for restraining the position of said holding means such as to move said holding means through said restraining means thus setting said work rolls at predetermined offset positions;

a spacer means adapted to be moved into and out of the space between said holding means and said restraining means so as to provide, as required, the working space necessary for the replacement of said work rolls;

a third driving means provided on said frame and connected to said spacer means so as to be able to drive said spacer means; and

a guide means provided on the face of said housing confronting said holding means and adapted to guide the movement of said holding means in the direction of path of the rolled material.

4,614,104

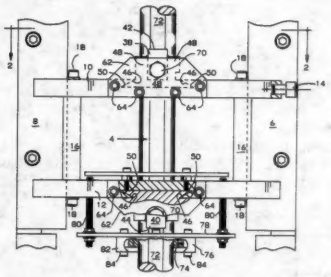
APPARATUS FOR SUPPORTING A BODY FOR RECIPROCAL MOVEMENT

David A. Straw, Arvada, Colo., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 644,228, Aug. 27, 1984, abandoned. This application Jan. 13, 1986, Ser. No. 818,406

Int. Cl.[4] B21D *22/20*

U.S. Cl. 72—347 **9 Claims**



1. In a machine for forming can bodies, said machine comprising a ram supported by a frame for reciprocal movement along a horizontal path, said ram being provided with support surfaces comprising at least two planar surfaces extending in a direction generally parallel to the longitudinal axis of said ram, said planar surfaces being circumferentially spaced apart from each other, a pair of horizontally spaced apart supporting means each comprising roller means mounted ot said frame and in line contact across the width of each of said spaced apart planar surfaces, each roller means straddling the plunar surfaces that lie adjacent to each roller means and extending to a width exceeding the adjacent width of the planar surface, each roller means mounted for rotation and openly exposed over substantially the full extent of said roller means, dampening means affixed to the frame and in contact with the outer surface of said ram during its reciprocal movement along the

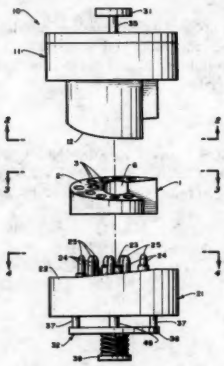
horizontal path, said dampening means being positioned between said roller means and the end of said ram, at least one freely rotatable roller secured to the frame and having a generally cylindrical outer surface, a third planar surface on said ram extending in a direction generally parallel to said longitudinal axis, the at least one freely rotatable roller straddling the third planar surface to a width exceeding the width of the third planar surface, said rotatable roller being openly exposed over substantially the full extent thereof, and means for urging said one freely rotatable roller into contact with said third planar surface whereby the means for supporting in conjunction with the means for urging provide straight horizontal line movement without deviation or rotation during the reciprocal movement of said ram.

4,614,105

APPARATUS FOR MANUFACTURING BAFFLES FOR SHELL AND TUBE TYPE HEAT EXCHANGERS

Shibuya Hisao, Tokyo, and Yusa Tsunero, Chiba, both of Japan, assignors to Kamui Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1985, Ser. No. 761,380
Int. Cl.[4] B21D *5/02, 53/00, 53/04;* **B23P** *15/26*
U.S. Cl. 72—382 **3 Claims**



1. An apparatus for forming helical baffles from a plate containing a series of apertures in the pattern of a tube bank comprising:

a first die having a helically shaped first surface and containing a series of guide rods each having a lower base and an upper tapered end having a diameter smaller than said apertures;

a second die having a helically shaped second surface opposed to and of a mating shape to said first surface and containing a pattern of sleeves in registration with said guide rods;

reaming means on said second die within said sleeve for forming lips on said plate when it is disposed between said dies; and

stamping means for translating said first and second surfaces toward each other.

4,614,106

TAB LIFTING AND CRIMPING TOOL

Daniel Forget, Unit 11, 2665 Cape Horn Avenue, Coquitlam, British Columbia, V3K 6B8, Canada

Continuation-in-part of Ser. No. 595,952, Apr. 2, 1984, abandoned. This application May 13, 1985, Ser. No. 733,261
Int. Cl.[4] B21D *17/02*
U.S. Cl. 72—384 **6 Claims**

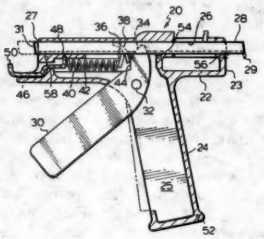
1. A combination tab lifting and crimping tool for lifting and crimping tabs which have been bent over a flange, comprising:

(a) a casing having a pair of openings at opposite respective tab lifting and tab crimping ends thereof and an elongated tool channel therein communicating with the openings:

(b) an elongated tool member slidably mounted in said tool channel having thereon a tab lifting finger proximate said tab lifting end of said member and casing and a tab crimping face proximate said tab crimping end of said member and casing:

(c) a flange gripping finger affixed to the tab crimping end of said casing;

(d) a trigger pivotally mounted in said casing and having a



tool engaging end in the interior of said casing coupled to said elongated tool intermediate said tab lifting finger and tab crimping face thereof; and

(e) biasing means located in said casing and engaging said tool mamber urging the tab lifting finger thereof away from said casing and said tab crimping face thereof towards said casing;

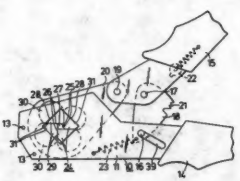
wherein upon manual pivoting of said trigger said tab crimping face approaches said flange gripping finger for crimping a tab over a flange and said tab lifting finger approaches the opening at the tab lifting end of said casing.

4,614,107

TOOL

Mats Norin, Älvdalen, Sweden, assignor to Pressmaster Tool AB, Alvdalen, Sweden

Filed Feb. 26, 1985, Ser. No. 705,633
Claims priority, application Sweden, Feb. 27, 1984, 8401062
Int. Cl.[4] B21D *41/00*
U.S. Cl. 72—402 **11 Claims**



1. A crimping tool comprising:

(a) a tool body having a jaw opening defined by a plurality of straight guide surfaces for slidably receiving a plurality of jaws movable relative to each other along said guide surfaces, said guide surfaces at least when extended intersecting each other to define a polygon having at least three sides; and

(b) at least three abutting crimping jaws positioned for relative movement within said jaw opening to define a crimping opening, said jaws having straight first and second jaw surfaces that intersect each other at an angle and having third surfaces said first, second, and third surfaces of each jaw at least when extended intersecting each other to define a triangle, said first jaw surface defining edges of a crimping opening, said first jaw surface of each jaw slid-

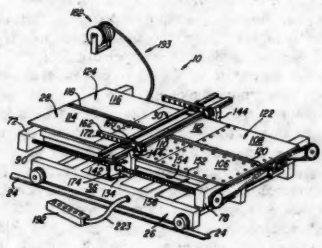
ably abutting said second jaw surface of an adjacent jaw, each of said third surfaces slidably abutting a respective one of said straight guide surfaces of said tool body with sliding movement of said third surfaces of said jaws relative to said straight guide surfaces causing relative sliding movement of abutting ones of said first and second jaw surfaces to change the size of said crimping opening, wherein the number of jaws is equal to the number of guide surfaces in said tool body, and wherein the intersection of said first and second jaw surfaces of each jaw defines a corner and each corner of a jaw moves along a plane that is parallel to the guide surface along which the third surface of that jaw slides, each said plane passing through the geometric center of the polygon defined by said guide surfaces and intersecting at right angles a plane in which said polygon lies.

4,614,108

DIE CART

Fred Bolle, Milford; John R. Herronen, Linden, and Joseph M. Wright, Fenton, all of Mich., assignors to Tek-Matik, Inc., Hartland, Mich.

Filed Apr. 12, 1985, Ser. No. 722,655
Int. Cl.[4] B21J *13/00*
U.S. Cl. 72—446 **15 Claims**



1. A die cart comprising:

A. a carriage adapted to be moved along track means toward and away from a die press;

B. a turntable mounted for rotary movement on said carriage and having a first smooth flat upper load surface at one end thereof at the approximate height of the bed of the press and a second smooth flat upper load surface at the opposite end thereof at the same height; and

C. a transfer device mounted on said turntable for fore and aft movement over said first and second load surfaces and having coupling means for engaging a die to push or pull a die positioned on either load surface onto or off of the bed of the press.

12. A method of changing the dies in a press comprising:

A. positioning a rotatable load surface in proximity to the press;

B. delivering a new die to a portion of said load surface remote from the press;

C. pulling the old die out of the press and onto another portion of said load surface adjacent the press;

D. rotating said load surface to move said new die into a position adjacent the press and move said old die to a position remote from the press; and

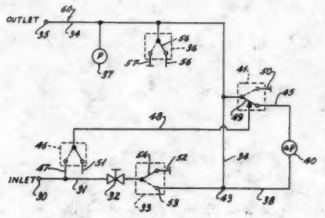
E. pushing said new die into the press.

4,614,109

METHOD AND DEVICE FOR TESTING THE PERMEABILITY OF MEMBRANE FILTERS

Frieder Hofmann, Kriftel, Fed. Rep. of Germany, assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 562,961, Dec. 19, 1983, abandoned. This application Jul. 15, 1985, Ser. No. 754,583
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248185; Aug. 31, 1983, 3331419; Aug. 31, 1983, 3331420
Int. Cl.[4] G01N *15/08*
U.S. Cl. 73—38 **16 Claims**



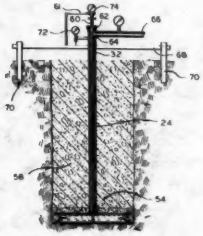
1. Method for testing the permeability of membrane filters by submitting, within a first, closed system, the inlet side of a wetted membrane filter to a predetermined testing gas pressure and measuring the pressure gradient over time within said first, closed system, characterized in that a reference pressure system is brought up to the testing gas pressure at the beginning of any measurement and that the pressure gradient is determined by way of the pressure differential between said first, closed system and said reference pressure system.

4,614,110

DEVICE FOR TESTING THE LOAD-BEARING CAPACITY OF CONCRETE-FILLED EARTHEN SHAFTS

Jorj O. Osterberg, 4049 Bunker La., Wilmette, Ill. 60091

Continuation-in-part of Ser. No. 618,594, Jun. 8, 1984, abandoned. This application Mar. 29, 1985, Ser. No. 717,536
Int. Cl.[4] G01N *3/24*
U.S. Cl. 73—84 **21 Claims**



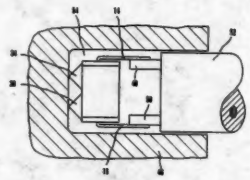
1. A device for separately measuring the load-bearing capacity of an earthen substrate at the bottom of a hole and of the skin friction between the walls of the hole and a shaft in the hole, said device comprising a vertically acting expansion means resting flat on the bottom of said hole, means extending from the surface of the earth to said expansion means for transmitting a pressurized fluid from the top of the shaft to the expansion means at the bottom of the hole thereby expanding the expansion means to transmit upwardly and downwardly acting forces at the top and bottom of the expansion means, and means responsive to said transmission of fluid into said expansion means for measuring upward movement of the top of the expansion means to measure skin friction and for measuring

downward movement of the bottom of the expansion means to measure underlying support capabilities.

4,614,111
POSITION SENSOR FOR FUEL INJECTION APPARATUS

George D. Wolff, P.O. Drawer 9407, Winter Haven, Fla. 33880

Filed Feb. 15, 1985, Ser. No. 701,935
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—119 A 20 Claims



16. A sensor assembly for detecting the position of valve means in fluid control apparatus, of a fuel injection apparatus, said sensor assembly comprising:

an integrated circuit sensing element;

a lead frame assembly having a plurality of leads;

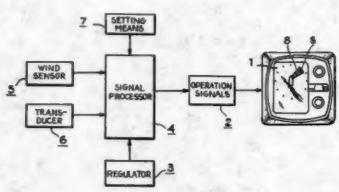
electrically conductive means attaching contact pads on said integrated circuit sensing element to corresponding ones of said leads; and

encapsulation means formed about said sensing element and a portion of said leads, said encapsulation means forming projections above a surface of said sensing element, peaks of said projections defining a plane for positioning said sensing element a predetermined distance from an end surface of said sensor.

4,614,112
NAVIGATION INSTRUMENT

Lasse Sletmo, Västerås, Sweden, assignor to Instrumentverken AB, Sollentuna, Sweden

Filed Jan. 2, 1985, Ser. No. 688,459
Claims priority, application Sweden, Jan. 2, 1984, 8400013
Int. Cl.[4] G01C *21/00*
U.S. Cl. 73—178 R 3 Claims

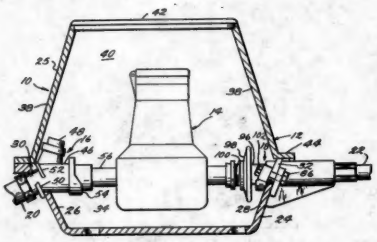


1. A navigation instrument for boats and comprising a measuring instrument (1) responding to at least an elecrical actual value signal and having indicator means (8, 9) arranged to visually indicate said actual value as a sector surface (S), the navigation instrument being characterized in that said indicator means (8, 9) is implemented as quasi-analogue elements, preferably in form of liquid crystal type, the actual value being obtained from a microprocesor (4) supplied with at least a measured value and being connected to said measuring instrument (1) through an operation step (2) for said quasi-analogue elements to turn some of the elements on in dependent on the output from the microprocessor to form an actual value indicator (8) starting from a point at the measuring instrument (1) said point being common to an imaginary criterion value indicator or to a criterion value indicator (9) formed by quasi-analogue elements turned on dependent on an electric criterion value signal obtained from a criterion value source (3) and supplied to the measuring instrument (1) via the microprocesor (4) and the operation step (2), said indicator (8, 9) forming the borders for said sector surface (S) the area of which being proportional to the course deviation (β) of the boat.

4,614,113
WATER METER SERVICE INSTALLATION

Joseph L. Daghe, Decatur, and Robert E. Sands, Shelbyville, both of Ill., assignors to Mueller Co., Decatur, Ill.

Filed Apr. 1, 1985, Ser. No. 718,360
Int. Cl.[4] G01F *15/18*
U.S. Cl. 73—201 11 Claims



1. A water meter service installation comprising:

a water meter through which water from a water inlet line flows to a water outlet line;

a meter box enclosing said water meter, said meter box including a bottom tray section having side walls, end walls with oppositely disposed openings therein and an upwardly facing mouth, and an upper section having side walls, end walls and a downwardly facing mouth for mating with the upper facing mouth of said bottom try section in a common plane;

a first meter support fitting means carried by said bottom tray section in alignment with one of said openings and having a passage therethrough, said first meter support fitting means also having an outer end portion arranged to be connected to the water inlet line and inner end portion for sealingly supporting said water meter;

a second meter support fitting means carried by said bottom tray section in alignment with the other of said openings, said second meter support fitting means being arranged to be connected to the water outlet line, said second meter support fitting means including an elongated tubular extension member carried by said bottom tray section and having a major portion of the same extending outwardly of the bottom tray in alignment with the other of said openings, said elongated tubular extension member having an outer end arranged to be connected to the water outlet line, and a cartridge insert member telescopically extending into said tubular extension member and having an end portion positioned within said bottom tray section for sealingly supporting said water meter, said cartridge insert member having a passage therethrough with a pair of check valves in series therein to prevent backflow from said water outlet line through said water meter to said water inlet line, a major portion of said cartridge insert member and said check valves being positioned in said major portion of said tubular extension member outside of said meter box;

sealing means between said tubular extension member and said cartridge insert member;

and means for retaining said cartridge insert member against axial movement relative to said tubular extension member, said last mentioned means permitting removal of said cartridge insert member from said tubular extension mem-

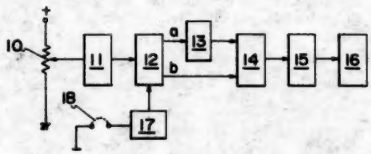
ber after said meter has been removed without removal of said tubular extension.

4,614,114

MEASURING DEVICE

Katsutake Matsumoto, and Yoichi Yachida, both of Nagaoka, Japan, assignors to Nippon Seiki Co., Ltd., Niigata, Japan

Filed Feb. 15, 1984, Ser. No. 580,200
Claims priority, application Japan, Mar. 31, 1983, 58-57010
Int. Cl.⁴ G01F *23/36*
U.S. Cl. 73—313 **4 Claims**



1. A measuring device comprising

a sensor means for entering an electrical signal which varies according to a measured quantity,

a processing circuit for outputting a warning signal or displaying a result of measurement at a display means according to the value of said electrical signal,

a fluctuation suppressing means having fluctuation suppressing function for absorbing fluctuations in detected signals caused by irregular variations in said measured quantity and suppressing display of irregular variations at said display means,

a switching means external to said processing circuit, for outputting an open/close signal, and

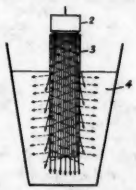
a selection controlling means within said processing circuit for controlling validity and invalidity of said fluctuation suppressing function of said fluctuation suppressing means according to said open/close signal from said switching means.

4,614,115

ULTRASONIC PROCESS AND APPARATUS FOR MONITORING AND MEASURING THE EVOLUTION WITH TIME OF PHYSICO-CHEMICAL, BIOLOGICAL OR BACTERIOLOGICAL PHENOMENA

Jean L. Pelletier, Ploubazlanec; Michel Moreau, Yerres, and Michel Bocquet, Issy.Les.Moulineaux, all of France, assignors to Societe d'Etudes et de Recherches de l'Ecole Nationale Superieure d'Arts et Metiers Seram, France

PCT No. PCT/FR84/00097, § 371 Date Dec. 7, 1984, § 102(e) Date Dec. 7, 1984, PCT Pub. No. WO84/04167, PCT Pub. Date Oct. 25, 1984
PCT Filed Apr. 9, 1984, Ser. No. 691,563
Claims priority, application France, Apr. 12, 1983, 83 05910
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—599 **12 Claims**



1. A method of monitoring and measuring the changes with time of a physical or chemical characteristic within a medium or between two media by sensing diffusion in said medium or media of ultrasonic waves into a probe contacting said medium or media, comprising the steps of:

generating in said probe longitudinal ultrasonic waves (L) propagating along a multiply-reflected path with an angle of incidence in said probe at the interface between said medium or media of said probe resulting in a mode conversion with longitudinal ultrasonic waves (L) and shear ultrasonic waves (S) generating numerous secondary echoes,

detecting and collecting said secondary echoes through a collecting face of said probe by using a transducer,

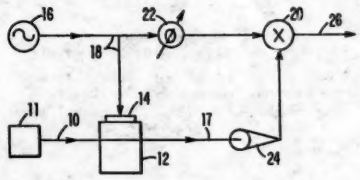
selecting one of said secondary echoes and observing a characteristic such as amplitude of said selected secondary echo for monitoring or measuring the evolution with time of said medium or media.

4,614,116

PHASE SENSITIVE ULTRASONIC MODULATION METHOD FOR THE DETECTION OF STRAIN-SENSITIVE SPECTRAL FEATURES

Alan L. Huston, Springfield, Va., and William E. Moerner, Fremont, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1985, Ser. No. 697,674
Int. Cl.⁴ G01N *29/00*
U.S. Cl. 73—657 **9 Claims**



1. A high-speed method for detecting strainsensitive spectral features in a sample, said method comprising the steps of

a. providing a sample containing a strain-sensitive spectral feature

b. generating an ultrasonic field of a frequency greater than 1 MHz in the sample,

c. propagating a light beam with a spot size smaller than the ultrasonic wavelength and with a spectral linewidth narrower than that of the spectral feature through a region of the sample containing the spectral feature and a well-defined wavefront of the ultrasonic field whereby the amplitude or phase of the light beam is modulated, and

d. detecting the modulated light beam emerging from the sample.

4,614,117

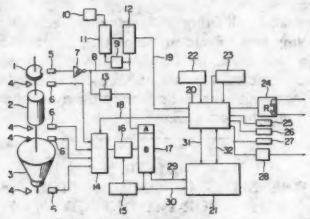
VIBRATION MONITORING APPARATUS

Ryousuke Taniguti, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP84/00354, § 371 Date Feb. 7, 1985, § 102(e) Date Feb. 7, 1985
PCT Filed Jul. 11, 1984, Ser. No. 702,504
Claims priority, application Japan, Jul. 11, 1983, 58-127464
Int. Cl.⁴ G01N *29/04*
U.S. Cl. 73—659 **6 Claims**

1. A vibration monitoring apparatus comprising a key phaser for detecting rotation of a rotary member, a period counter for receiving an output of said key phaser, a register for latching data of said period counter, an alarm level setting unit, a memory for storing a rotational frequency/vibration level pattern, a plurality of vibration sensors for detecting vibrations of said rotary member, a vibration sensor selecting scanner for receiving outputs of the respective vibration sensors, a control pro-

cessor including means for generating an alarm level at a predetermined rotational frequency on the basis of outputs from said register, said alarm level setting unit and said memory, an A/D converter for converting into a digital signal a vibration waveform output from the vibration sensor selected by said vibration sensor selecting scanner, a vibration waveform data input register for receiving an output of said A/D converter, a



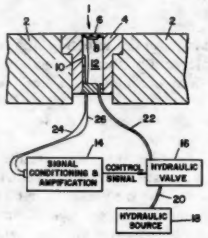
signal processor including means for comparing an output of said vibration waveform data input register and the alarm level from said control processor, for calculating the result of the comparison, and for sending a calculated result to said control processor, and output appliances for receiving and operating responsive to an output from said control processor based on said calculated result of said signal processor.

4,614,118

NON-COMPLIANT PRESSURE CELL

Gordon E. Strickland, Jr., Yorba Linda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 12, 1985, Ser. No. 700,771
Int. Cl.[4] G01L *9/04*
U.S. Cl. 73—701 **14 Claims**



1. A device for measuring pressure having a wide range of sensitivity and being free of errors due to compliance, comprising:

a rigid cell body having a fluid-tight interior space and an open side on an outward facing surface, the interior space being filled with a fluid;

a flexible diaphragm located on said outward facing surface of the cell body covering said open side in a fluid-tight relationship;

first gage means for sensing deflection of said flexible diaphragm located on the interior surface of said flexible diaphragm and within said interior space;

signal conditioning and amplification means operably connected to said first gage means for receiving signals from the first gage means to determine if the diaphragm is in a deflected state and to amplify and transmit said signals;

hydraulic valve means operably connected to said signal conditioning and amplification means and in fluid communication with said interior space for receiving signals from the signal conditioning and amplification means to open said valve to allow fluid into the interior space when the diaphragm is deflected and to close said valve when said diaphragm is not deflected;

a continuously pressurized hydraulic source in fluid communication with the hydraulic valve for providing fluid to the interior space through the hydraulic valve; and

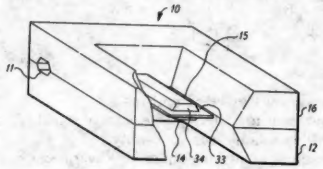
a means to measure the fluid pressure in the interior space when said diaphragm is in the non-deflected state.

4,614,119

RESONANT HOLLOW BEAM AND METHOD

Paul M. Zavracky, Norwood; Stephen D. Senturia, Boston, and Richard H. Morrison, Jr., Taunton, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Mar. 8, 1985, Ser. No. 709,870
Int. Cl.[4] G01L *11/00*; H01L *21/306*; B44C *1/22*; C23F *1/02*
U.S. Cl. 73—704 **54 Claims**



11. A resonant hollow microstructural cantilever beam sensor element formed by the process of:

(a) etching a trough in the front face surface of a first substrate;

(b) etching a complementary-image trough in the front face surface of a second substrate;

(c) doping the trough areas of said first and second substrates to a predetermined etch-stop depth;

(d) aligning the first and second substrates in precise registration with their respective front face surfaces joined;

(e) bonding said joined front face substrate surfaces together; and

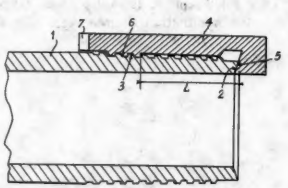
(f) etching the undoped substrate from the doped substrate region to relieve the beam from the remaining substrate material.

4,614,120

DETERMINATION OF THE MAKE-UP TORQUE FOR PIPE JOINTS

Louis Fradin; Bernard Plaquin, and Hervé Salkin, all of Aulnoy, France, assignors to Vallourec, Paris, France

Filed Feb. 8, 1985, Ser. No. 699,541
Claims priority, application France, Feb. 10, 1984, 84 02063
Int. Cl.[4] B23Q *17/00*; G01L *5/24*
U.S. Cl. 73—761 **10 Claims**



9. A method of making up pipe joints of the type that introduce radial hoop stresses on the male and female elements upon make up and include stops on the male and female elements which introduce axial stresses upon make up, which comprises gauging the male and female elements to ascertain the position of each element when the stops first come into contact, marking said position on each the male and female elements so that

said markings are aligned when the stops first come into contact, applying grease to said male and female elements, and making up said male and female elements by torquing said elements beyond the point where said markings align by a pre-determined radial angle ascertained by calibrated statistical measurement of the plurality of similar male and female elements.

4,614,121

ELECTROMAGNETIC FLOW METER

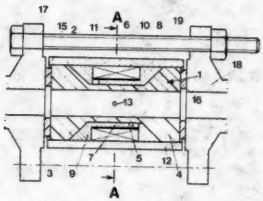
Henning M. Hansen; Hans E. Jacobsen; Konstantin Lassithiotakis, all of Nordberg, and John Nyrup, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Jan. 14, 1985, Ser. No. 691,452

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401377

Int. Cl.⁴ G01F *1/58*

U.S. Cl. 73—861.12 **11 Claims**



1. An electromagnetic flow meter, comprising, a measuring tube of an electrically insulating material, a magnet system including two pole shoes on diametrically opposite sides of said tube, a magnetic coil surrounding said shoes in coaxial relation to said tube, two measuring electrodes circumferentially between said pole shoes, a yoke for the magnetic return circuit surrounding said magnetic coil, each said pole shoe having at only one end thereof a radially and circumferentially extending web portion with said web portions being adjacent opposite ends of said coil connected to said yoke.

4,614,122

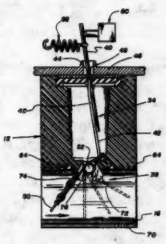
FLUID FLOW DETECTOR WITH ADAPTOR

Brian J. Graves, Lincoln, Nebr., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 688,026, Dec. 31, 1984, abandoned. This application Feb. 3, 1986, Ser. No. 829,718

Int. Cl.⁴ G01F *1/28, 15/18*

U.S. Cl. 73—861.74 **2 Claims**



1. A fluid flow detector assembly comprising:

(a) a saddle having a first opening and adopted for securement to a conduit having a second opening,

(b) a curved adapter plate provided between said saddle and said conduit in sealing relation and having a third opening, said first, second, and third openings being in alignment,

(c) a first boss means extending from said curved adapter plate, around said third opening and engaging said saddle in said second opening,

(d) a second boss means including flexible fingers extending from said saddle around said first opening and engaging said conduit in said second opening to provide a seal between said saddle and said conduit, and

(e) flow detection means adapted for insertion in said conduit through said first, second, and third openings, a portion of said flow detection means in contact with said flexible fingers to force said fingers into contact with said conduit, said flow detection means shiftable in response to flow flow through said conduit and including a reactor member extending into said saddle.

4,614,123

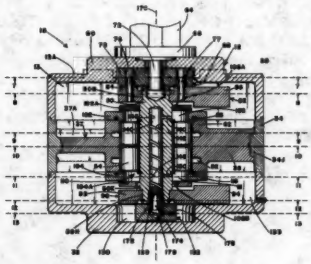
VERTICAL VIBRATOR

L. Kirk Tompkins, Little Rock, Ark., assignor to Global Manufacturing Co, Inc., Little Rock, Ark.

Filed Jan. 11, 1985, Ser. No. 690,729

Int. Cl.⁴ F01M *9/00*; F16H *57/04*

U.S. Cl. 74—87 **1 Claim**



1. An industrial vibrator adapted for vertical installation, said vibrator comprising:

a rigid, generally cylindrical vibrator casing including an interior opening, a longitudinal axis and a top and a bottom, said casing being substantially sealed on its top and bottom extremes by stationary annular end caps and adapted to be vertically secured upon an intended application;

an elongated, rotatable shaft substantially coaxially disposed vertically within said casing and adapted to be forcibly rotated by an external conventional motor, said shaft having a radial periphery;

a hollow, tubular, central bore coaxially defined within said shaft, said bore being internally rifled;

bearing means disposed within said casing substantially coaxially about the radial periphery of said shaft for bracing said shaft, said bearing means disposed within a bearing housing extending between upper and lower bearing end caps;

eccentric means coupled to said shaft for forcibly vibrating said casing including an eccentric disposed above said bearing housing and an eccentric disposed below said bearing housing;

first lubricating oil reservoir means disposed within said bearing housing beneath said bearings but above said lower bearing end cap, said first resservoir means being in fluid flow communication with said bore of said shaft, whereby oil may be drawn upwardly in response to shaft rotation via said shaft rifling;

upper shaft output port means disposed at the top of said shaft in fluid flow communication with said bore adapted

to receive and distribute oil pumped upwardly thereby for subsequent ejection into and recirculation within said bearing housing;

second oil reservoir means disposed within said casing beneath said lower eccentric;

impeller means rotatably disposed within said second reservoir means and driven by said shaft, said impeller means including inlet port means communicating with said shaft interior, whereby rotation of said shaft sucks oil disposed within said second reservoir means through said inlet port means to said rifled bore and circulates oil upwardly within said bearing housing to initially oil the bearings and other internal vibrator parts when said vibrator starts;

lower shaft output port means in fluid flow communication with said shaft bore for initially forcing oil drawn from said second oil reservoir means into said bearing housing; and,

one-way check valve means internaly associated within said bore of said shaft for allowing the upward passage of oil from said second reservoir during shaft rotation and for preventing reverse flow of oil to resist the draining of oil from said shaft bore and said first reservoir.

4,614,124

ROLLING NUT FOR TRANSFORMING A ROTARY MOVEMENT OF A SHAFT INTO A THRUST MOVEMENT OF THE ROLLING UNIT

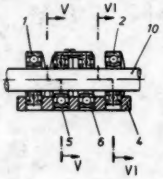
Joachim Uhing, Dorfstede 34, D-2301 Molfsee, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,562

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302625

Int. Cl.[4] F16H *21/16*

U.S. Cl. 74—89 **2 Claims**



1. A rolling nut in combination with a smooth shaft for transforming a rotary movement of the shaft into a thrust movement of the nut, comprising a plate-shaped base; two lateral roller cages; and at least one intermediate roller cage, said roller cages surrounding said shaft and being arranged in said base at an angle one to another and each having an inner annular surface engageable with an outer surface portion of said shaft, said base having a front side and a back side opposite to said front side and being formed at said front and back side with pocket-shaped recesses for receiving said roller cages, each pocket-shaped recess being elongated to define a major axis, the major axes of the recesses for receiving the lateral roller cages being angularly offset from the axis of rotation of the smooth shaft by a given angle in a first direction, the major axes of the recesses for receiving the intermediate roller cage being angularly offset from the axis of rotation of the smooth shaft by said given angle in a second opposite direction, the major axes of corresponding recesses on the front and back sides of the base plate substantially overlaying one another whereby said roller cages are adjustable from the left hand thread of said shaft to the right hand thread thereof and vice versa by repositioning said roller cages from the front side of said base onto the back side of said plate and vice versa.

4,614,125

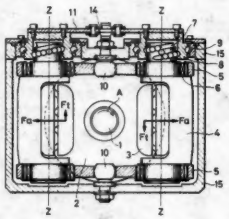
INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Hideo Okoshi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,267, Sep. 12, 1983, abandoned. This application Sep. 19, 1985, Ser. No. 778,169

Int. Cl.[4] F16H *15/08, 15/00*

U.S. Cl. 74—200 **4 Claims**



1. An infinitely variable traction roller transmission having:

a housing;

input and output shafts rotatably and coaxially journaled to said housing;

input and output toric discs mounted on said input and output shafts, respectively, so as to rotate together with said shafts in a transmission state;

the opposed surfaces of said toric discs forming a toroidal cavity therebetween;

traction rollers opposed to each other in said toroidal cavity symmetrically with the axis of the input and output shafts;

trunnion devices supporting said traction rollers, respectively, rotatably about rotational axes perpendicular to respective stationary pivot axes of the trunnion devices which reside on a plane perpendicular to the axis of the input and output shafts, said rotational axes also residing on said plane and being perpendicular to the axis of the input and output shafts in an isochronous transmission state, support means for supporting the trunnion devices such that the traction rollers engage said input and output toric discs so as to generate traction forces on the traction rollers in the transmission state, said support means supporting the trunnion devices rotatably about the pivot axes and displaceably in the direction of the pivot axes;

screw devices provided on an axial end of the respective trunnion devices and threaded in the same direction, each of said screw devices comprising a male screw member, a female screw member and a plurality of balls interposed between grooves of said screw members, one of said screw members being formed on one of the trunnion devices, bearing means for supporting the other screw member on the housing rotatably about one of the pivot axes and fixedly in the direction of the pivot axes and for receiving said traction forces from the trunnion device;

a speed change link mechanism comprising a pair of speed change levers connected to the other screw members, respectively, for turning them, a pair of connecting levers having one end thereof pivotally supported on said speed change levers, respectively, a balance lever connecting the other ends of said connecting levers and having a central portion, and a speed change rod mounted on the central portion of said balance lever, said speed change link mechanism having means for effecting the rotation of the other screw members by forcing the speed change rod to move in a direction perpendicular to said plane by means of an outside force and for thereby causing the trunnion devices with the traction rollers to move axially oppositely to each other through the screw devices, and whereby said trunnion devices rotate about the pivot axes while returning to a position where the rotational axes of the traction rollers reside on said plane perpendicular to

the axis of the input and output shafts so that the transmission may achieve a desired speed change ratio corresponding to the displacement of the speed change rod.

4,614,126

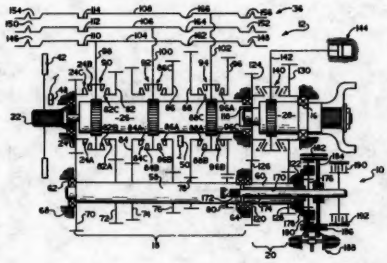
POWER SYNCHRONIZER

Stephen A. Edelen, Battle Creek, and Timothy J. Morscheck, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 13, 1985, Ser. No. 732,991

Int. Cl.[4] F16H *3/08*

U.S. Cl. 74—333 **37 Claims**



1. A power synchronizer assembly for use with a mechanical change gear transmission of the type comprising a transmission housing, an input shaft rotatably supported in said housing and driven by an engine through a nonpositive coupling, an output shaft rotatably supported in said housing and a plurality of selectable ratio gears selectively engageable one at a time to a first transmission element by means of positive, nonsynchronized jaw clutch assemblies for providing a plurality of selectable drive ratios between said input and output shafts, each of said jaw clutch assemblies comprising a first jaw clutch member rotatably associated with said first transmission element and a second jaw clutch member rotatably associated with a second transmission element, each of said ratio gears rotatably fixed to one of said second jaw clutch members, said power synchronizer assembly selectively actuatable for selectively varying the rotational speed of said second transmission element and the second jaw clutch members rotatably associated therewith independently of the rotational speed of said engine, said power synchronizer assembly characterized by:

a sun gear shaft rotatably supported in said housing and rotatably associated with said second transmission element;

a sun gear fixed for rotation on said sun gear shaft;

a plurality of planet gears surrounding said sun gear and constantly meshingly engaged therewith;

a planet carrier rotatably supporting said planet gears, said planet carrier rotatably supported for rotation relative to said housing and said sun gear;

means for drivingly coupling said planet carrier to said output shaft;

a ring gear surrounding said planet gears and constantly meshingly engaged therewith, said ring gear normally supported for rotation relative to said housing, sun gear and planet carrier; and

selectively actuated power synchronizer assembly operating means for selectively rotationally coupling said ring gear to said housing.

4,614,127

STEERING GEAR

Dieter Elser, Essingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

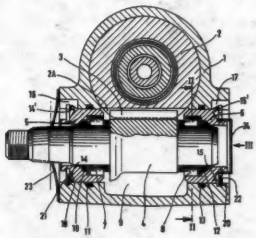
PCT No. PCT/EP83/00207, § 371 Date May 29, 1984, § 102(e) Date May 29, 1984, PCT Pub. No. WO84/01550, PCT Pub. Date Apr. 26, 1984

PCT Filed Aug. 3, 1983, Ser. No. 617,996

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238740

Int. Cl.[4] F16H *1/04, 35/06;* B62D *1/20*

U.S. Cl. 74—422 **4 Claims**



1. In a steering gear of the rack and pinion gear type having intermeshing teeth, means for adjustment of the rack and pinion gear teeth relative to each other wherein said pinion is on a sector shaft, said means comprising eccentric bushings supporting respective ends of said sector shaft and being adjustably carried rotatably in bores in a steering housing whereby rotation of said bushings effects radial adjustment of said sector shaft for adjustment of said rack and pinion teeth;

including securing means for securing said bushings in adjusted rotative position; the improvement wherein said securing means comprises deformable members on said bushings and notch means in said housing for receiving deformations of said deformable members in said notch means to secure said bushings in adjusted rotative position.

4,614,128

LINEAR DRIVE DEVICE WITH TWO MOTORS

Hans Fickler, Wiesendangen, Switzerland, assignor to Lars International S.A., Luxembourg, Luxembourg

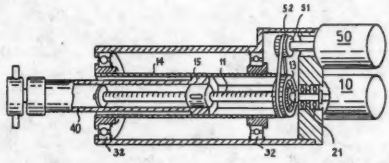
PCT No. PCT/CH82/00129, § 371 Date Aug. 11, 1983, § 102(e) Date Aug. 11, 1983, PCT Pub. No. WO83/02141, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 7, 1982, Ser. No. 522,226

Claims priority, application Switzerland, Dec. 18, 1981, 8103/81; Aug. 24, 1982, 5025/82

Int. Cl.[4] F16H *1/10*

U.S. Cl. 74—424.8 B **21 Claims**



1. A linear drive device with a threaded rod and a coacting nut, comprising a cylindrical housing, a first drive motor mounted at one end of the housing, a rotatably mounted threaded rod connected at one end thereof to the first drive

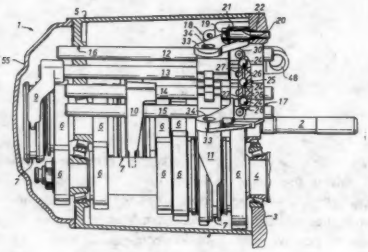
motor drive shaft, a driving nut disposed on the threaded rod and within the cylindrical housing, a cylindrical drive tube disposed within the housing and connected to the drive nut which is coaxially mounted with respect to the threaded rod, and a driving motor connected to one end of the driving tube for imparting rotational movement thereto whereby the relative movement of the threaded rod transmits a driving axial movement thereto.

4,614,129

ARRANGEMENT FOR MOUNTING GEAR SHIFT MEANS IN A GEARBOX

Lars H. Skog, Södertälje, Sweden, assignor to Saab-Scania Aktiebolag, Södertälje, Sweden

Filed Dec. 17, 1984, Ser. No. 682,303
Claims priority, application Sweden, Dec. 20, 1983, 8307044
Int. Cl.[4] G05G *5/10, 9/12*
U.S. Cl. 74—477 **7 Claims**



1. In a gear box: a housing having an axis and axis end walls; within the housing a plurality of axially movable selector shafts that carry a corresponding plurality of selector forks, which forks are axially movable relative to the housing for providing different gear ratios for the gearbox; an integrally implemented bearing bracket enclosed in the housing and removably attached to the inner surface of one of said axial end walls of the housing by bolts fitted in locating holes in the bearing bracket and in holes in said one axial end wall, each of the locating holes in the bearing bracket being provided with a locating sleeve which, for positioning the bearing bracket relative to the housing, also fits into the corresponding hole in said one axial end wall, said bracket being formed with bearings for the selector shafts so that the shafts are at least partially carried by the bearing bracket.

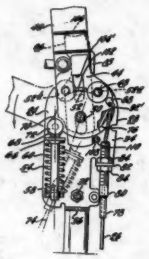
4,614,130

TENSIONING CONTROL FOR FLEXIBLE CABLE

Richard A. Heismann, Knoxville, and Warren W. Pendry, Bonfield, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 11, 1984, Ser. No. 680,384
Int. Cl.[4] G05G *7/04*
U.S. Cl. 74—501 R **12 Claims**

1. A cable control assembly for tensioning a flexible cable and locking said cable in a tensioned condition, said control assembly comprising a control bracket, an actuating lever pivotally mounted on said bracket, a spring linkage pivotally mounted at one end to said bracket and at the other end to said actuating lever, an arcuate cam surface on said actuating lever disposed around the actuating lever pivot, means for connecting a cable end to said actuating lever with a portion of said cable adjacent said cable end riding on said cam surface, stop means on said bracket for limiting the pivotal movement of said actuating lever between a cable relaxed position and a cable tensioned position, the point of pivotal connection of said spring linkage to said actuating lever passing across the center line extending through said actuating lever pivot and the point of pivotal connection of said spring linkage to said bracket when said actuating lever is moved between the cable relaxed and the cable tensioned position whereby said spring linkage



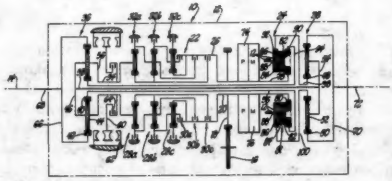
effects a locking of said actuating lever in either the cable tensioned or cable relaxed position.

4,614,131

STEER DRIVE FOR CROSS DRIVE TRANSMISSION

Arthur Hall, III, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1984, Ser. No. 668,417
The portion of the term of this patent subsequent to Sep. 30, 2003, has been disclaimed.
Int. Cl.[4] F16H *37/06, 47/04*
U.S. Cl. 74—720.5 **5 Claims**



1. In a differential steer cross drive transmission including a housing having a pair of output shafts supported thereon at opposite ends thereof for rotation on an output center line of said housing, a pair of differential gear units at opposite ends of said housing concentric with said output center line each including a drive output member connected to a corresponding one of said output shafts and a drive input member and a reaction member, and range gear means concentric with said output center line between an input of said transmission and each of said differential gear unit drive input members, a steer drive system comprising, an infinitely variable ratio transmission means concentric with said output center line having an input connected to said transmission input and a steer drive output, a primary pinion gear on said housing rotatable about a fixed axis parallel to said output center line, a secondary pinion gear on said housing meshing with and having the same number of teeth as said primary pinion gear and rotatable about a fixed axis parallel to said output center line, a steer transfer sun gear concentric with said output center line meshing with one of said primary and said secondary pinion gears, means drive connecting said steer drive output and said steer transfer sun gear, a first steer cross shaft means rotatable on said output center line drive connected to said reaction member in one of said differential gear units, a second steer cross shaft means rotatable on said output center line drive connected to said reaction member in the other of said differential gear units, means drive connecting one of said first and said second steer cross shaft means to one of said primary and said secondary

pinion gears so that said one of said first and said second steer cross shaft means rotates in the same direction as said steer transfer sun gear, and means drive connecting the other of said first and said second steer cross shaft means to the other of said primary and said secondary pinion gears so that said other of said first and said second steer cross shaft means rotates in the direction opposite of said steer transfer sun gear at the same speed as said one of said first and said second steer cross shaft means.

4,614,132

SINGLE CENTERLINE CROSS DRIVE STEERING TRANSMISSION

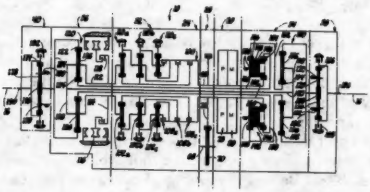
Arthur Hall, III, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1984, Ser. No. 668,418

The portion of the term of this patent subsequent to Sep. 30, 2003, has been disclaimed.

Int. Cl.[4] F16H *37/06, 47/04*

U.S. Cl. 74—720.5 **5 Claims**



1. In a single centerline cross drive steering transmission, the combination comprising, housing means defining a centerline, a pair of output shafts at opposite ends of said housing and rotatable on said centerline, input gear means generally at the longitudinal center of said housing means and rotatable about said centerline, multi-ratio range gearing means disposed on one side of said input gear means including a drive input shaft and a drive output shaft rotatable about said centerline, means drive connecting said input gear means and said drive input shaft, infinitely variable ratio hydrostatic steer drive means disposed on the other side of said input gear means including a steer input shaft and a steer output shaft each rotatable about said centerline, means connecting said input gear means and said steer input shaft, a first planetary differential gear set disposed longitudinally outboard of said range gearing means concentric with said centerline and including a range drive input connected to said drive output shaft and a reaction member and a drive output connected to one of said transmission output shafts, a second planetary differential gear set disposed longitudinally outboard of said hydrostatic steer drive means concentric with said centerline and including a range drive input and a reaction member and a drive output connected to the other of said transmission output shafts, an inner cross shaft on said centerline drive connected to each of said range drive inputs of said first and said second differential gear sets, steer transfer gear means disposed between said hydrostatic steer drive means and said second differential gear set concentric with said centerline and including a steer transfer input gear means connected to said steer output shaft and a pair of steer transfer output gear means rotatable in opposite directions at equal speeds, a first outer cross shaft around said inner cross shaft concentric with said centerline drive connecting one of said pair of steer transfer output gear means and said reaction member of said first differential gear set, and a second outer cross shaft around said inner cross shaft concentric with said centerline drive connecting the other of said pair of steer transfer output gear means and said reaction member of said second differential gear set.

4,614,133

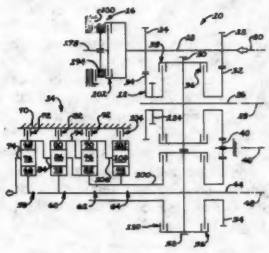
VEHICLE TRANSMISSION HAVING COUNTERSHAFT AND PLANETARY PORTIONS

Karl A. Nerstad, Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Oct. 12, 1984, Ser. No. 660,353

Int. Cl.[4] F16H *37/00, 3/08*

U.S. Cl. 74—740 **14 Claims**



1. A vehicle transmission comprising:

a countershaft transmission including an input first shaft, a second shaft, an output third shaft, a plurality of gears operatively associated with the shafts, a reversing idler gear cooperatively engaging two of the plurality of gears, and low, high, and reverse clutch assembly means for selectively connecting the gears in a preselected manner and respectively providing either one of two forward speeds and one reverse speed at the third shaft, the low and high clutch assembly means being disposed generally along the second shaft; and

a planetary transmission serially driven by the third shaft and including a plurality of interconnected planetary gear sets and brake assembly means for selectively actuating one of the planetary gear sets and providing one of a plurality of speeds for use with each speed of the countershaft transmission.

4,614,134

OVERLOAD PROTECTION SYSTEM FOR PLANETARY GEAR DRIVE

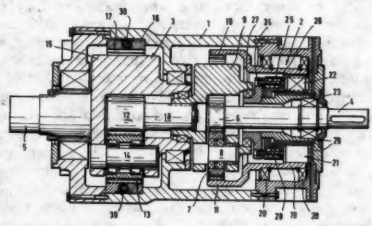
Werner Bohle, Lüdinghausen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,544

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1983, 3323251

Int. Cl.[4] F16H *57/10*

U.S. Cl. 74—768 **12 Claims**



1. A gearing unit for use with a mining apparatus, said gearing unit comprising: a housing; an input shaft extending into the housing for imparting rotary drive; an output shaft extending into the housing; first and second planetary gearing stages disposed within the housing for drivably interconnecting the

input shaft to the output shaft, each gearing stage comprising a sun wheel, planet wheels meshing with the sun wheel, a carrier supporting the planet wheels, and an outer ring gear meshing with the planet wheels, the carrier and the ring gear of the first gearing stage constituting rotatable components one of which is drivably connected to the sun wheel of the second gearing stage, the sun wheel of said first gearing stage being drivably connected to the input shaft and the carrier of the second stage being drivably connected to the output shaft; load sensors in the form of pins engaging with the outer ring gear of said second gearing stage to hold the ring gear stationary and provide electrical signals indicative of loading in alternate directions of rotary drive; releasable coupling means for coupling the other rotatable component of the first gearing stage to the housing to hold said other rotatable component stationary and to permit rotary drive to be transmitted through both the gearing stages from the input shaft to the output shaft; and a pressure chamber coacting with the coupling means for receiving hydraulic pressure fluid used to effect release of the coupling means to permit the associated other rotatable component to rotate, thereby to interrupt the drive through the gearing stages in response to said electrical signals in the event of overloading.

4,614,135

STRIPPING DEVICE FOR STRIPPING COATED WIRE

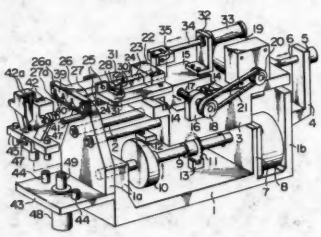
Takeji Ito; Saburo Kusumi; Kazuo Nishikawa, all of Komaki; Michio Fukuda; Toshifumi Okunishi, both of Osaka; Sinkichi Miwa, and Yosinobu Ohta, both of Yokkaichi, all of Japan, assignors to CKD Corporation; Sumitomo Electric and Tokai Electric Wire Company Limited, all of, Japan

Filed Jul. 2, 1984, Ser. No. 626,632

Claims priority, application Japan, Jul. 8, 1983, 58-125120

Int. Cl.[4] H02G 1/12

U.S. Cl. 81—9.51 **7 Claims**



1. A stripping apparatus for stripping coated electric wires comprising a pair of clamping plates having opposing contactable edges movable into and out of contact with each other and provided with cutting edges formed in said opposing contactable edges, the cutting edges in said clamping plates cooperating with each other in defining, when said clamping plates are held in contact with each other, cutting gaps of different sizes, said clamping plates being adapted to clamp and sever, at their cutting edges, an end portion of a coating on the coated electric wire at least partially, means for causing a relative movement between the coated electric wire and said clamping plates thereby to remove the severed end portion of the coating from a core wire of the coated electric wire, means for shifting said clamping plates in a direction substantially perpendicular to said coated electric wire to bring into a cutting position a selected one of said cutting gaps having a size corresponding to the diameter of the coated electric wire to be stripped, and a resilient plate affixed to one side of at least one of said clamping plates and overlying at least a portion of the cutting gaps when said clamping plates are in contact with each other, said resilient plate having sufficient resilience to deflect upon engagement with the coated electric wire when said clamping plates move into contact with each other and being returnable to its normal position when said clamping plates are moved away from each other for ejecting the severed coating end from the cutting gap.

4,614,136

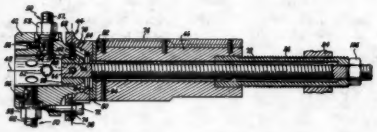
ANGULARLY ADJUSTABLE MANDREL ASSEMBLY

John E. Pertle, Garden Valley, Calif., assignor to Tri-Tool, Rancho Cordova, Calif.

Filed Nov. 26, 1984, Ser. No. 674,921

Int. Cl.[4] B23B 3/22

U.S. Cl. 82—44 **24 Claims**



1. A mandrel assembly for rotatably supporting a cutting tool against an end of a hollow workpiece such that the angle of a cutting plane, defined by the orbiting cutting tool, is universally adjustable with respect to a central axis of the workpiece comprising:

(a) mandrel means for rotatably supporting the cutting tool such that a cutting edge of the tool orbits about the mandrel means defining a cutting plane extending generally perpendicular to a longitudinal axis of the mandrel means;

(b) a mounting base having a central axis and a first hemispherical surface, the center of the first hemispherical surface lying on the central axis of the mounting base;

(c) radially extendable securing leg means attached to the mounting base for securing the mounting base within a hollow workpiece having a central axis such that the central axis of the mounting base is generally coincident with the central axis of such hollow workpiece;

(d) a mounting bracket structure having a second hemispherical surface complimentary to the first hemispherical surface;

(e) first attachment means attaching the mounting bracket structure to the mounting base such that the first and second hemispherical surfaces are in contact with each other and the center of the second hemispherical surface coincides with the center of the first hemispherical surface;

(f) second attachment means attaching the mandrel means to the mounting bracket structure such that the cutting plane always passes through the center of the first and second hemispherical surface; and

(g) coupling means interposed between an end of the mandrel means and the mounting bracket structure to permit the lateral movement of the mandrel means with respect to the mounting bracket structure while prohibiting relative rotation therebetween, the coupling means comprising:

(i) a first anti-rotation means associated with the mounting bracket structure;

(ii) a second anti-rotation means associated with the mandrel means; and,

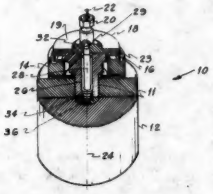
(iii) a coupling means extending between the mounting bracket structure and the mandrel means, the coupling having at least a third anti-rotation means cooperating with said first and second anti-rotation means in such a manner that said mounting bracket structure and mandrel means can move laterally relative to each other but cannot rotate relative to each other.

4,614,137

MAGNETIC TOOL CHANGER

Everett E. Jones, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 14, 1983, Ser. No. 513,631
Int. Cl.[4] B23B *13/02*
U.S. Cl. 82—205 **4 Claims**



1. A magnetic machine tool changer and driver for electromagnetically holding and driving a cutting tool, the tool driver assembly comprising:

a drive motor having a rotating spindle therein;

an electro-magnetic member for producing an electro-magnetic field which can be energized and de-energized and being mounted concentrically about the spindle; an armature plate secured to the spindle; the armature plate mounted on top of the electro-magnetic member and centered thereon;

a spring biased pin received on top of a coil spring in the bottom of a bore through the center of the armature plate and spindle, the top of the pin extending upwardly from the top surface of the armature plate; and

a removable tool adapter having a tool chuck adapted for holding the cutting tool, the tool adapter secured to the top of the armature plate when the electro-magnetic member is energized, the bottom of the tool adapter having a hole therein for receiving the top of the pin when the tool adapter is secured to the top of the armature and centered thereon, the bottom of the pin compressing the coil spring downwardly in the bore when the electro-magnetic member is energized, when the field is de-energized the pin is urged upwardly by the spring for aiding in the release of the removable tool adapter from the top of the armature plate.

4,614,138

CUTTER FOR PLASTER BOARD AND THE LIKE

James E. Altman, P.O. Box 334, Gray, Ga. 31032

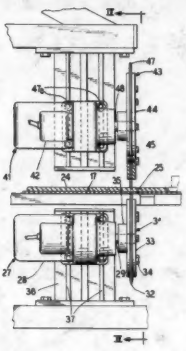
Filed May 29, 1985, Ser. No. 738,842
Int. Cl.[4] B26D *3/08*
U.S. Cl. 83—51 **13 Claims**

10. A process for making straight cuts in sheet material such as plasterboard and the like comprising the steps of:

(A) supporting such a sheet material,

(B) introducing an edge of such sheet material into the nip region existing between a pair of axially spaced coplanar circular blade members which have their respective circumferential edges in an adjacent but noncontacting relationship, said nip region being located about in the middle of such edge by said supporting

(C) rotating said blade members while maintaining a blade edge differential speed between said blade members



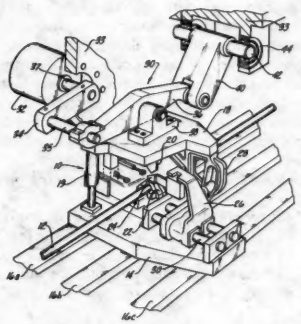
(D) permitting such sheet material after said introducing to travel through said nip region.

4,614,139

ROTARY LINK DRIVEN CUTOFF MACHINE

Alexander Borzym, West Bloomfield, Mich., assignor to Alpha Industries, Inc., Novi, Mich.

Filed Jul. 12, 1985, Ser. No. 754,087
Int. Cl.[4] B23D *21/00, 25/04*
U.S. Cl. 83—300 **4 Claims**



1. Apparatus for operating a flying cutoff for moving stock such as tubing comprising:

cutoff means movable as unit with the stock and having platen means movable transversely of said stock for performing a severing function;

rotary power means;

crank means connected to the rotary power means;

control linkage means interconnecting the crank means with the platen means for producing a closed loop, non-circular motion path thereof such that the ratio of the travel distance of the cutoff means with the work to the travel of the platen means transverse to the work is greater than 1;

said control linkage comprising a pair of pivotally interconnected intermediate links, one end of which is fixed in position relative to said rotary power means and the other which is connected to said crank means; and

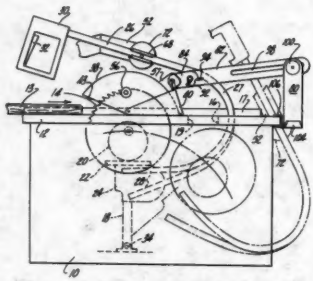
means connecting an intermediate point of one of said links to said platen means.

4,614,140

SAFETY DEVICE FOR ROCKING ARM SAW

Albert A. Macksoud, R.R.#1, Leamington, Ontario, Canada (N8H 3V4)

Filed May 31, 1984, Ser. No. 615,608
Int. Cl.[4] B23D *45/04*; B27B *5/20*
U.S. Cl. 83—397 **13 Claims**



1. Blade guard apparatus for use with a portable saw adaptable for use as both a pull-through rocker arm saw with a handle extending above its tabletop for rocking a circular disc blade from a concealed position below the table top to a partially exposed cutting position above the tabletop, and as a table saw with a plurality of exposed longitudinal positions within a long slot in the tabletop for depth of cut adjustment, said slot extending in the direction from a front edge of the tabletop toward a rear edge of the tabletop; comprising:

a blade guard for substantially protectively covering the exposed portion of said circular saw blade,

means fastened to a portion of said handle which extends above said tabletop for securing a connecting arm for releasably connecting said blade to said handle,

said connecting arm allowing said handle to lift and rock said blade guard over said rocking saw blade by said handle for normally covering the exposed portion of said saw blade during the cross-cutting operation of said saw,

securing means fastened in a recess in the surface of said tabletop at the rear edge thereof behind the saw blade slot for releasably securing an upright support on said tabletop,

said upright support being oriented and dimensioned so that the portion which extends above the table top is confined to the line of cut of said saw blade, said upright support having means for pivotally and slidably supporting a bar for mounting said blade guard on said upright support, and

said blade guard being releasably mountable on said mounting bar for covering the exposed portion of said saw blade in any of said plurality of positions within said tabletop slot during the rip-cutting operations of said saw.

4,614,141

FOOD PRODUCT CENTERING AND ALIGNING TUBE

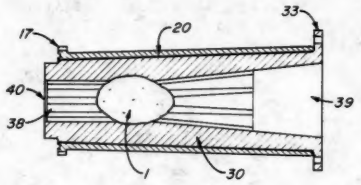
George A. Mendenhall, 2800 Tartan Pl., Boise, Id. 83702, and Scott K. Carter, 4401 Goldenrod, Meridian, Id. 83642

Filed Jun. 13, 1985, Ser. No. 744,244
Int. Cl.[4] B26D *1/03*
U.S. Cl. 83—402 **21 Claims**

1. In hydraulic food product cutting apparatus including a food cutter, a food product centering and aligning tube comprising:

a rigid tubular housing, said housing fixed in immovable relationship relative to said food cutter, and

a liner constructed of resilient material, said liner fixed in immovable relationship with respect to said housing and snugly engaging the interior surface of said housing for maintaining configuration of said liner and said liner having an inlet port and an outlet port, the inner surface of



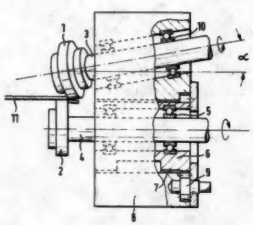
said liner operable to resiliently engage a food product for the centering and aligning thereof relative to the cutter.

4,614,142

CIRCULAR CUTTER SHEARS FOR THE LONGITUDINAL EDGING OF PLATES AND SHEETS

Manfred Fritz, Erkrath; Hans Scheel, Velbert, and Gerhard Wangerin, Langenfeld, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 2, 1984, Ser. No. 626,780
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1983, 3323717; Jun. 8, 1984, 3421331
Int. Cl.[4] B23D *19/04*
U.S. Cl. 83—496 **19 Claims**

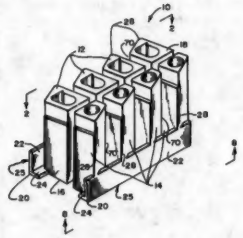


1. Shears for trimming the longitudinal edges of plates and sheets, comprising: a bearing support member; an upper circular cutter and a lower circular cutter defining therebetween a cutting gap for receiving a plate or sheet material to be trimmed fed between the cutters; a lower cutter shaft journalled in said bearing support member and having a free end projecting therefrom carrying the lower cutter mounted horizontally and transversely to the feed direction of the plate or sheet material; and an upper cutter shaft journalled in said bearing support member and having a free end projecting therefrom carrying said upper cutter; said upper cutter shaft extending obliquely downwardly toward said free end thereof at an acute angle α relative to said lower cutter shaft when viewed in the feed direction, and therefore relative to the plate or sheet material surface, said upper cutter shaft also extending obliquely relative to the feed direction so that the axis of said upper cutter shaft forms an acute angle of offset β relative to a direction perpendicular to the feed direction thereby causing said upper cutter to diverge from the cut edge of the material being trimmed.

4,614,143
APPARATUS FOR PROVIDING COMMONING CONNECTORS

Peter Ingwersen, Cary, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Sep. 20, 1985, Ser. No. 778,091
Int. Cl.[4] B26D *7/06*
U.S. Cl. 83—622 **4 Claims**



1. Means for severing a rigid integrally molded dielectric connector stick including a plurality of spaced-apart housings joined together by at least one L-shaped carrier member having first and second legs joined at a corner thereof, the housing including adjacent side and bottom walls forming an outside corner, the first and second legs of the carrier member joining the respective side and bottom walls of adjacent housings together at said outside corners, and tool-receiving recesses formed between adjacent housings,

said severing means comprising:

a tool bit having first and second cutting surfaces slidingly receivable in said recesses and adapted to sever said first and second legs of said carrier member, respectively; and

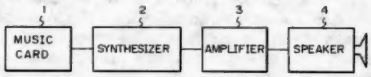
means for advancing said tool bit cutting surfaces towards said carrier legs,

whereby, upon advancement of the tool bit towards said carrier legs, said first carrier leg is first severed at points remote from said corner, and both said first and second carrier legs are thereafter simultaneously severed until they are removed from between adjacent housings.

4,614,144
MUSIC CARD SYSTEM

Iwao Sagara; Koichi Nakagawa, and Shintaro Hotta, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1984, Ser. No. 653,445
Claims priority, application Japan, Sep. 28, 1983, 58-178165
Int. Cl.[4] G10H *7/00*
U.S. Cl. 84—1.28 **10 Claims**



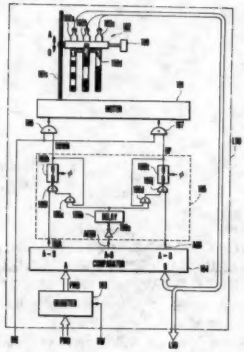
9. For use in a music card system which includes a music card, a music synthesizer for receiving and reading said card during stationary electrical contact with said card and for generating an electrical signal according to a code stored on said card, and a speaker for converting the electrical signal to acoustic music sound, a music card, comprising:

an integrated circuit card having a plastic support with an integrated circuit memory together with an integrated circuit micro-computer for controlling the reading of said integrated circuit memory, said integrated circuit memory being adapted to store a digital code of music including a music interval, frequency, length, and loudness of each music note, and a length of each music pause.

4,614,145
OPERATING MEMBER CONTROL DEVICE OF ELECTRONIC MUSICAL INSTRUMENT

Masanobu Chibana, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 558,930, Dec. 7, 1983, abandoned. This application Sep. 17, 1985, Ser. No. 776,773
Claims priority, application Japan, Dec. 8, 1982, 57-214996; Jan. 13, 1983, 58-3152[U]; Jan. 13, 1983, 58-3153[U]; Jan. 22, 1983, 58-7656[U]
Int. Cl.[4] G10B *3/10*
U.S. Cl. 84—345 **17 Claims**



6. An operating member control device of an electronic musical instrument, comprising:

an operating member, capable of being manually operated, for setting tone control parameter data determining a musical tone element;

controlling means for generating a control signal corresponding to said tone control parameter data;

a drive mechanism for changing a position of said operating member in accordance with said control signal; and

a switch circuit, capable of being manually operated, for selectively disabling application of the control signal to said drive mechanism and thereby enabling maual operation of said operating member at the same time said control parameters are set during operation of said electronic musical instrument.

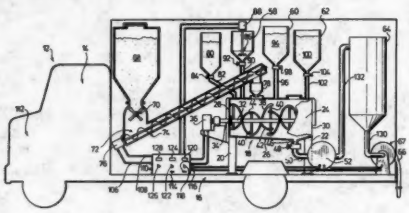
4,614,146
MIX-DELIVERY SYSTEM FOR EXPLOSIVES

Cyrus A. Ross, and Eberhard Thurow, both of Kirkland Lake, Canada, assignors to Les Explosifs Nordex Ltee/Nordex Explosives Ltd., Kirkland Lake, Canada

Filed May 14, 1984, Ser. No. 610,310
Int. Cl.[4] F42B *3/00*
U.S. Cl. 86—20 C **9 Claims**

1. A mobile mixing plant for mixing on a batch basis components of an aqueous slurry explosive mixture, said mobile plant comprising a plurality of storage tanks for said individual components to be mixed, a rotary mixer for mixing said components, each storage tank having means for transferring a batch quantity of the respective explosive slurry component to said mixer, a variable speed drive for rotating said mixer, means for controlling said variable speed drive to rotate said mixer at various rotational speeds which are predetermined by the sequence of addition of said components to said mixer, all of said individual components introduced to said mixer remain-

ing in said mixer until completely mixed by said rotary mixer into an aqueous slurry explosive mixture and means for with-



drawing such aqueous slurry explosive mixture from said mixer.

4,614,147

MACHINE FOR MANUFACTURING STRUCTURAL MEMBERS BY BRAIDING THREADS, AND STRUCTURAL MEMBERS OBTAINED THEREBY

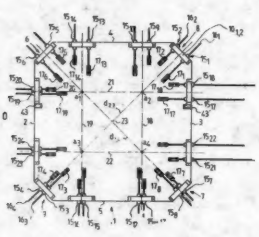
Dante Vendramini, 34, rue du Général Leclerc, 92270 Bois Colombes, France

Filed Mar. 19, 1985, Ser. No. 713,667

Claims priority, application France, May 22, 1984, 84 04478

Int. Cl.[4] D04C *1/06, 3/00, 3/02*

U.S. Cl. 87—5 **28 Claims**



1. A method of manufacturing structural members having high strength relative to the forces to which they are to be subjected; the members comprising parallel cores and helical windings around the cores, comprising the steps of:

forming the members by winding threads from spools;

moving the thread supply means in directions transverse to directions in which the parallel cores extend;

making at least a portion of a turn initially, during winding, then making at least a portion of a turn in a different direction;

releasing, by traction, lengths of thread suitable for fabricating one step of the frame member, the direction of release defining a traction direction;

moving the spools transversely to the traction direction along go-and-return paths corresponding to the desired shape of the windings to be made around the cores; and

releasing another length of thread suitable for fabricating the next step once one step of the frame member has been made.

4,614,148

CONTROL VALVE SYSTEM FOR BLOWOUT PREVENTERS

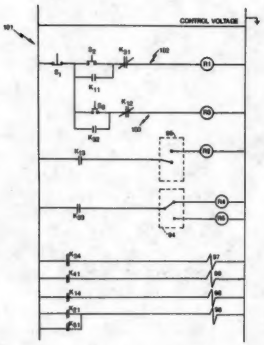
H. John Bates, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Division of Ser. No. 338,792, Jan. 11, 1982, Pat. No. 4,509,405, which is a continuation-in-part of Ser. No. 67,609, Aug. 20, 1979, Pat. No. 4,349,041. This application Mar. 1, 1985, Ser. No. 707,427

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.[4] F15B *13/044*

U.S. Cl. 91—420 **8 Claims**



1. For use with a blowout preventer having an actuating cylinder and piston for actuating the closing of the blowout preventer, the actuating piston having a closing side and an opening side of smaller effective area than the closing side, a differential pressure control valve system comprising:

a directional flow control system for directing flow from the opening side of the actuating piston alternatively to the closing side of the actuating piston and to a discharge line; and

a pressure sensitive switching system in communication with the directional flow control system, said switching system being operative, upon the communication of a pressurized fluid to the closing side of said actuating piston, to cause said directional flow control system to direct flow from the opening side of the actuating piston to the closing side of the actuating piston when the pressure at the closing side of the actuating piston is below a predetermined magnitude, and to automatically vary the alternative flow paths of the directional flow control system when the pressure at the closing side of the actuating piston reaches said predetermined magnitude to cause said directional flow control system to direct flow from the opening side of the actuating piston to said discharge line;

said pressure sensitive switching system further comprising an override system for selectively causing said directional flow control system to direct flow from the opening side of the actuating piston to the discharge line independently of the pressure at the closing side of the actuating piston; and

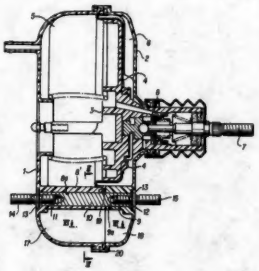
said pressure sensitive switching system further comprising electrical circuit means for selectively causing said directional flow control system to automatically direct flow in response to the pressure of said pressurized fluid.

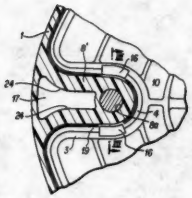
4,614,149

BRAKE BOOSTER DEVICE

Atsushi Omi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 7, 1982, Ser. No. 447,673
Claims priority, application Japan, Dec. 10, 1981, 56-198810
Int. Cl.[4] F16J 3/02; F01B 19/00
U.S. Cl. 92—98 D 11 Claims





1. A brake booster device comprising:

(a) a front shell having a circular outer periphery and an inner peripheral portion;

(b) a rear shell having a circular outer periphery and an inner peripheral portion, said rear shell being sized and shaped to interengage with said front shell to form a booster housing;

(c) an axially movable power piston disposed within said booster housing;

(d) a diaphragm member disposed within said booster housing, said diaphragm member serving to divide said booster housing into a constant pressure chamber and a variable pressure chamber;

(e) at least two front sleeve portions, each of said at least two front sleeve portions being connected to said front shell by a front connecting portion which extends radially inwardly from said inner peripheral portion of said front shell;

(f) at least two rear sleeve portions, each of said at least two rear sleeve portions being connected to said rear shell by a rear connecting portion which extends radially inwardly from said inner peripheral portion of said rear shell, each of said at least two rear sleeve portions being sized, shaped, and positioned to interengage with a corresponding one of said at least two front sleeve portions to form a single, continuous sleeve extending axially through said booster housing, each of said single, continuous sleeves containing a continuous throughhole which is exterior of said pressure chamber and interior of said shells;

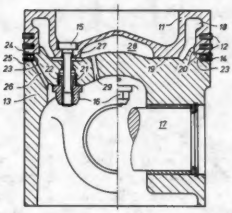
(g) a rod member inserted into each of said continuous throughholes, each of said rod members being connected at its front end to said front shell and at its rear end to said rear shell.

4,614,150

BUILT-UP PISTON

Herbert Deutschmann, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Feb. 20, 1985, Ser. No. 703,490
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1984, 3426238
Int. Cl.[4] F16J 1/04
U.S. Cl. 92—221 10 Claims



1. An assembled piston for an internal combustion engine, comprising a piston bottom part of light metal and a piston top having piston ring means, necked-down bolt means for securing the piston top at the piston bottom part, said necked-down bolt means being arranged with the heads thereof in the piston top for the simple disassembly of the piston top, an annular cooling oil space means being formed by the piston top and piston bottom part, oil scraper ring means, the necked-down bolt means being arranged substantially symmetrical and parallel to one another within a center plane perpendicular to the wrist pin axis, means for clamping together the piston top and piston bottom part including said necked-down bolt means and nut means cooperating with said necked-down bolt means, said nut means including a tubularly shaped extension provided with an external thread, said nut means being screwed into corresponding internal threads provided in the piston bottom part, and the oil scraper ring means being arranged between the piston top and piston bottom part, and said oil scraper ring means being arranged in an annular groove having one flank thereof coordinated to the piston top and another flank thereof to the piston bottom part so that any leakage oil out of the cooling oil space means is able to flow back into the crankcase by way of the annular groove and discharge channel means connected thereto.

4,614,151

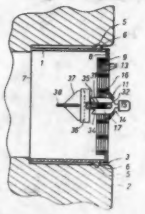
NOZZLE FOR DISCHARGING VENTILATION AIR FROM A VENTILATION SYSTEM

Sven E. Elfverson, Trollhättan, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden

PCT No. PCT/SE83/00198, § 371 Date Jan. 2, 1985, § 102(e) Date Jan. 2, 1985, PCT Pub. No. WO84/04498, PCT Pub. Date Nov. 22, 1984
PCT Filed May 18, 1983, Ser. No. 694,455
Int. Cl.[4] B60H 1/34; F24F 13/12
U.S. Cl. 98—2 5 Claims

1. A nozzle for discharging ventilation air from a ventilation system, preferably arranged in a vehicle, including at least one outlet housing with a through-flow duct for ventilation air, a fixed plate transverse to the flow duct and rigidly attached to the outlet housing, and a plurality of plates parallel to said fixed plate, these plates being mutually displaceable in a direction transverse to the flow duct under the action of a control lever passing through the plates, the plates being formed with perforation patterns, which in coaction form ventilation ducts through which the ventilation air can flow and in response to the setting of the control lever cause deviation of the flow direction of the ventilation air, wherein each displaceable plate is formed with a grid cross comprising at least two intersecting

bars, of which one bar has a substantially circular cross section, while the other bar has a substantially elliptical cross section and wherein the control lever is adapted to grip round a grid cross, the control lever having two pairs of longitudinal slots, one pair of said slots being adapted to grip without play one of



the intersecting bars in each respective grid cross, said other pair of slots comprising a first slot adapted to grip without play the other of the intersecting bars, and a second slot formed with a width disabling engagement with the other of the intersecting bars.

4,614,152

AIR INDUCTION SYSTEM FOR AUTOMOTIVE AIR-CONDITIONER

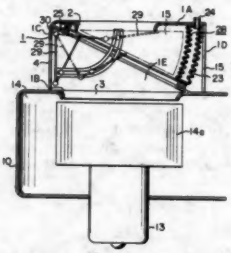
Yoshinori Fukasaku, Hitachi; Katsuhiko Hashimoto, and Kunihiro Noto, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,755

Claims priority, application Japan, Nov. 4, 1983, 58-207798; Mar. 6, 1984, 59-49081

Int. Cl.[4] B60H *1/24*

U.S. Cl. 98—2 **5 Claims**



1. An air induction system for an automotive air-conditioner, including:

a box-like housing disposed upstream of a blower of the air-conditioner and provided with a recirculated indoor air induction opening and a fresh outdoor air induction opening and with an air switching door means adapted to selectively open and close said indoor air induction opening and said outdoor air induction opening;

an accordion-type shutter means operatively associated with said air switching door means so as to be expanded and contracted, respectively, when said air switching door means is moved to a position for opening said outdoor air induction opening and when said air switching door means is moved to a position for opening said indoor air induction opening;

said housing being further provided with at least one auxiliary indoor air induction opening formed in a portion of said housing means adjacent to said accordion-type shutter means; and

said shutter means and said auxiliary indoor air induction opening being arranged such that said auxiliary indoor air induction opening is closed when said shutter means is expanded, and said auxiliary indoor air induction opening is opened when said shutter means is contracted.

4,614,153

JUICE EXTRACTOR

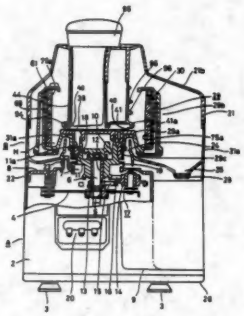
Shosaku Kurome; Tokio Akai, and Takahiro Maeda, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jan. 2, 1985, Ser. No. 688,305

Claims priority, application Japan, Jan. 17, 1984, 59-6914; Dec. 14, 1984, 59-264929

Int. Cl.[4] A23N *1/00*

U.S. Cl. 99—511 **27 Claims**



1. A juice extractor comprising:

a base having a motor;

a vessel supported on said base;

a centrifugal separator cylinder disposed in said vessel and rotatably driven by said motor, said centrifugal separator cylinder having an inner periphery, and in an inner bottom portion thereof, a cutter for cutting material;

a cylindrical filter detachably mounted in said inner periphery of said centrifugal separator cylinder for separating juice and residue from the material cut by said cutter and for collecting said residue therein,

said cylindrical filter comprising a spiral body having an expandable spiral juice flowing spacing formed between the adjacent spiral portions of the filter;

filter pressing means for pressing said cylindrical filter from the top thereof so as to prevent expansion of the spiral spacing of the cylindrical filter during rotational driving of said cylinder by said motor, said filter pressing means being removably coupled to said centrifugal separator cylinder so that said cylindrical filter can be taken out from aid centrifugal separator cylinder when said filter pressing means is not coupled to said centrifugal separator cylinder; and

rotation preventing means for preventing a relative rotation between said cylindrical filter and said centrifugal separator cylinder when said centrifugal separator cylinder is, at least, normally rotated by said motor.

4,614,154

PEANUT PRESS FEED MECHANISM

William J. Simelunas, Glen Rock; Agostino Aquino, Paterson, and Nicholas Polifroni, Cliffside Park, all of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 20, 1984, Ser. No. 632,964

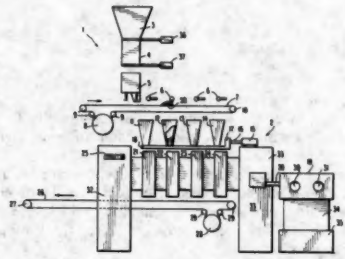
Int. Cl.[4] B30B *9/06*

U.S. Cl. 100—116 **11 Claims**

1. An apparatus for removing a predetermined percentage by weight of liquid from a product, comprising:

a volumetric feed chamber adapted to receive an entering product;

a weighing means adapted to weigh the entering product;
a means for transferring a predetermined volume of the entering product from said volumetric feed chamber to said weighing means;
a means for applying pressure to the entering product to extract a predetermined amount of liquid therefrom as a percentage by weight of the entering product;
a means for transferring the entering product from said weighing means to said means for applying pressure;
a means for removing the entering product from said means for applying pressure, after said predetermined amount of liquid has been removed from the entering product;
said weighing means comprising a weighing chamber;



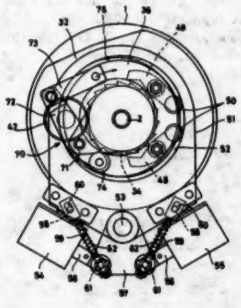
said means for applying pressure including a hydraulic press;
said hydraulic press having a plurality of press chambers;
each one of said plurality of press chambers having a chamber volume generally equal to said predetermined volume of the entering product;
a release gate disposed beneath the feed chamber adapted to release contents of said feed chamber;
said weighing device being disposed directly beneath said release gate;
whereby said hydraulic press removes said predetermined percentage of liquid from the entering product while filling said plurality of press chambers, regardless of variations in mass density of the entering product.

4,614,155

MECHANISM FOR ADJUSTING THE VERTICAL POSITION OF A FORMAT ON A PRINTER

Shigeru Shimizu, Takarazuka, Japan, assignor to Hamada Printing Press Mfg. Co., Ltd., Osaka, Japan

Filed Nov. 19, 1985, Ser. No. 799,731
Claims priority, application Japan, Nov. 22, 1984, 59-178377
Int. Cl.[4] B41F *13/24*
U.S. Cl. 101—248 **2 Claims**



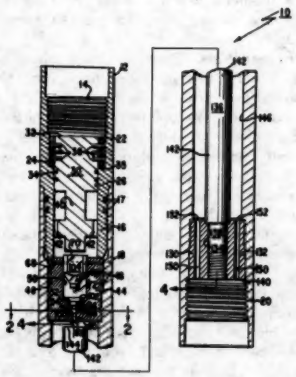
1. A mechanism for adjusting the vertical position of a format on a printing press having a blanket cylinder and a format cylinder, said mechanism comprising:
a blanket shaft of the blanket cylinder rotatably supported;
a phase adjusting gear rotatably mounted on said blanket shaft;
a gear mounted on the format cylinder and engaging said phase adjusting gear;
a gear support plate fixedly mounted on said blanket shaft so as to rotate together with said blanket shaft and having a tubular part;
a pair of ratchet wheels rotatably mounted on said tubular part of said gear support plate and coupled together and each having gears facing in opposite directions to each other;
a pawl support plate rotatably mounted on said tubular part of said gear support plate;
a pair of pawls having their middle portion pivotally supported on said pawl support plate and adapted to engage said pair of ratchet wheels;
gear transmission means supported on said pawl support plate for transmitting the rotation of said ratchet wheels to said phase adjusting gear;
a pawl biassing plate formed with a circular hole and pivotally mounted on a stationary portion of the printing press;
spring means for biassing said pawls against the inner wall of said circular hole formed in said pawl biassing plate;
a pair of solenoids for biassing said pawl biassing plate in one of two directions; and
means for converting the rotation of said blanket shaft to cause said pawl support plate to turn in alternate directions by a preset angle.

4,614,156

PRESSURE RESPONSIVE EXPLOSION INITIATOR WITH TIME DELAY AND METHOD OF USE

Edward A. Colle, Jr., Houston; Flint R. George, and Donald N. Yates, Jr., both of Katy, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 587,345, Mar. 8, 1984, abandoned. This application Jan. 6, 1986, Ser. No. 816,975
Int. Cl.[4] F42B *1/02*
U.S. Cl. 102—312 **29 Claims**



1. A device for actuating an explosive charge downhole in a well bore, comprising:
first assembly which includes an impact piston;
a first primer assembly for initiating a combustive reaction and actuated in response to an impact thereto from the impact piston of the first assembly which is, in turn, responsive to a first pressure condition in at least a portion of

the well bore produced by the manipulation of fluid pressure in the well bore from the surface thereof;

a second high output explosive charge for actuating said explosive charge; and

a combustive delay means for providing a combustive reaction initiated by the first primer assembly and a continuing combustive reaction for a time delay period providing sufficient time for an operator to alter the first pressure condition to a second pressure condition desired at the time of explosive actuation,

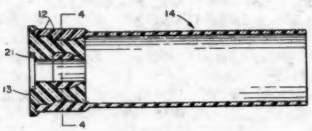
the combustive delay means continuing to provide a combustive reaction at the end of the time delay period after the initiation thereof to actuate the second high output explosive charge.

4,614,157

PLASTIC CARTRIDGE CASE

Peter F. Grelle, Edwardsville, and Venkataramaraj S. Urs, Godfrey, both of Ill., assignors to Olin Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 510,529, Jul. 5, 1983, abandoned. This application Oct. 4, 1984, Ser. No. 657,445
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.[4] F42B *5/30*
U.S. Cl. 102—466 **2 Claims**



1. An all plastic cartridge case, comprising:

an exterior tubular cylindrical body of extruded biaxially oriented polyethylene plastic having a forward end and a base end;

an annular internal glass fiber filled high density polyethylene plastic basewad having a glass fiber content by weight with the range of from about 5% to about 40%, a flex modulus of at least 400,000 pounds per square inch and a mold shrinkage of no more than 0.006 inches per inch is permanently molded to the inside surface of the base end of said body and having an axial opening adapted to receive a primer and having one or more interlock channels extending axially therein;

an exterior plastic rim molded into mechanically permanently interlocked attachment to said interlock channels of said basewad, said rim being of a material which has an Izod impact strength at 0 degrees F. of at least 5 ft-lbs per inch of notch and a Shore D hardness number of at least 70 and which is chemically dissimilar from said tubular body and basewad, said rim having a base portion extending outwardly radially beyond the base of said tubular body, a reduced diameter neck portion extending axially through said interlock channel and a locking projection extending radially from said neck portion to lie axially forward of a portion of said basewad;

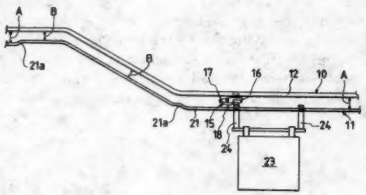
said basewad having a first portion disposed radially between said rim and said axial opening and having a second portion disposed radially between said rim and said base end of said tubular body.

4,614,158

CONVEYOR SYSTEM

Oscar Helde, Kungsbacka, Sweden, assignor to R. Paul Nymark and Karl Johan Pettersen, both of, Sweden

Filed Oct. 15, 1984, Ser. No. 664,067
Int. Cl.[4] B61B *10/02*
U.S. Cl. 104—172 S **8 Claims**



1. A conveyor system comprising:

an upper power track comprising a substantially level section and an inclined section, capable of being driven in first and second directions;

a lower free track spaced in parallel with said power track, said free track being spaced closer to said power track along said inclined section than along said level section;

at least one trolley connected to said free track by at least one carrier arm;

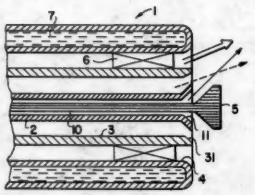
a coupling member connected to said power track comprising a pivotally mounted hook capable of engaging said carrier arm when said power track is driven in the first direction to propel said trolley along said free track in the first direction, a cam surface capable of riding over said carrier arm and pivoting said hook out of engagement with said carrier arm when said power track is driven in the second direction, and an arresting device comprising a recess having walls adapted to receive said carrier arm when said trolley is propelled along said inclined section only to control movement of the trolley along the inclined section by cooperation between said carier arm and the walls of said recess, said recess receiving said carrier arm when said trolley is propelled along said inclined section only when said recess and said connecting arm are brought closer together by the closer spacing between said power track and said free track along said inclined section only.

4,614,159

POWDERED COAL BURNER

Saburo Sugiura; Kiyohide Hayashi, both of Nagoya; Kenji Kanada, Chita; Noboru Demukai, Kaizu, and Tetsuo Okamoto, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 662,482, Oct. 19, 1984, abandoned. This application Jul. 22, 1985, Ser. No. 757,555
Claims priority, application Japan, Oct. 19, 1983, 58-194423
Int. Cl.[4] F23C *1/10*
U.S. Cl. 110—261 **3 Claims**



1. A powered coal burner comprising an oxygen nozzle, a

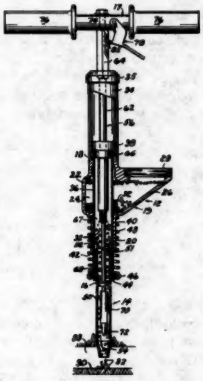
powered coal nozzle and air nozzle which are disposed concentrically from the center to the outside and have an open end, said oxygen nozzle being enlarged at its open end, and a cone at said enlarged open end of said oxygen nozzle for disposing oxygen in a radial direction for burning the powered coal, said cone is movable forward and backward for controlling the dispersion angle of oxygen, said open end of said oxygen nozzle being enlarged in a radial direction and the inside of said powered coal nozzle at its open end being beveled radially outward so so as to disperse the powdered coal in a radial direction into said radially directed oxygen, said air nozzle includes a double pipe for passing cooling water therein, the outside of said air nozzle is refractory coated, and vanes for producing swirl are provided in said air nozzle adjacent its open end.

4,614,160

PELLETIZED MATERIAL DEPOSITING TOOL

John Curlett, Watsonville, Calif., assignor to Fort Dodge Chemical Company, Lompoc, Calif.

Filed Nov. 5, 1984, Ser. No. 668,545
Int. Cl.[4] A01C *5/02*
U.S. Cl. 111—96 **6 Claims**



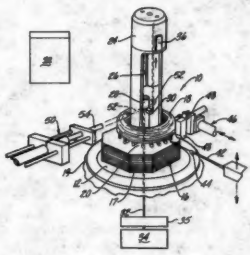
1. A pellet measured charge dispensing probe, comprising:
elongated housing means having a pellet passageway and a pellet reservoir;
earth penetrating drop tube means including a metering sleeve depending from said housing means for forming a pellet measuring chamber and telescoping at one end portion into the pellet passageway of said housing means in response to manually induced downward axial movement of the probe and intersecting the pellet reservoir and said metering sleeve having a wall port communicating with the reservoir when telescoped inwardly independently of any pellet dispensing action;
a valve seat forming restriction in the wall of said drop tube means adjacent one side of the port;
resilient means for normally biasing said metering sleeve toward a wall port closed telescopically extended position;
stem means extending through the housing and drop tube means and normally closing the drop tube means and including a valve normally seated on said valve seat for closing the drop tube means and defining the downward end limit of the pellet measuring chamber;
a stem guide on the stem means adjacent the other side of the port and cooperating with said valve for defining the upward end limit of the pellet measuring chamber; and,
handle means on said stem means above said housing means for axially moving said stem means relative to the housing means and metering sleeve and unseating said valve.

4,614,161

STATOR COIL LACING CORD SECURING APPARATUS AND METHOD

Robert E. Frederick, Garden City, Mich., assignor to Link Engineering Company, Detroit, Mich.

Filed Mar. 29, 1985, Ser. No. 717,831
Int. Cl.[4] D05B *3/00*
U.S. Cl. 112—121.2 **13 Claims**



1. A method of wrapping lacing cord around generally toroidal shaped end windings of a component of an electrodynamic machine and knotting the cord, using a lacing machine of the type having a lacing cord supply, a lacing needle, and means for rotatably indexing the end windings, said method enabling both said wrapping and said knotting to be accomplished using said lacing needle, comprising the steps of:
extending said lacing needle in a generally radial direction along a first axial end of said end windings and engaging said lacing cord,
retracting said lacing needle thereby forming a first lacing cord loop,
moving said lacing needle axially with respect to said end winding,
extending said lacing needle in a generally radial direction along a second axial end of said end winding and engaging said lacing cord,
retracting said lacing needle thereby forming a second lacing cord loop which is pulled through said first loop,
extending said lacing needle in a generally radial direction along said second axial end of said end winding and engaging said lacing cord,
retracting said lacing needle and pulling said lacing cord through said second loop,
cutting said lacing cord thereby forming a free cord end,
retracting said lacing needle and pulling said free cord end through said second loop, thereby forming a knot, and
pulling said free cord end to secure said knot.

4,614,162

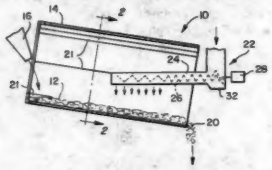
APPARATUS AND METHOD FOR DISTRIBUTION OF SEASONINGS AND LIKE GRANULAR/POWDERED MATERIALS

Philip J. Ryan, Dallas, and Pravin Desai, Carrollton, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Jun. 7, 1984, Ser. No. 618,224
Int. Cl.[4] B05C *19/00*
U.S. Cl. 118—19 **13 Claims**

1. A dispenser for distribution of seasonings and like granular/powdered materials of the type having a hopper for the seasonings, a tube in fluid communication with the hopper, the tube having an open outer end, and a motor-driven auger extending through the hopper and the tube, with the improvements comprising: the auger being in the form of a helical configuration of a bar inside the periphery of the tube leaving the center portion of the tube unobstructed, and having a metering section adjacent the hopper and a distribution section extending beyond the metering section in the direction of movement of the seasoning material, each section of the auger

having a different pitch, the pitch of the auger in the distribution section being at least about one-and-fourth times the pitch



in the metering section, and a set of seasoning distribution apertures extending along at least the end portion of the tube beneath the distribution section of the auger.

4,614,163

INK POT FOR FELT PENS FOR INSCRIBING POSTERS OR THE LIKE

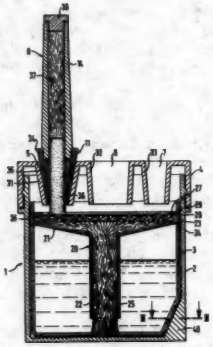
Nobert Hetzer, Lobbach, and Wolfgang Sommerfeld, Sinsheim-Hoffenheim, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Aug. 23, 1984, Ser. No. 643,519

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1983, 3332466

Int. Cl.[4] B05C *1/02*

U.S. Cl. 118—268 **12 Claims**



1. Ink pot for felt pens for inscribing posters or the like, comprising an ink container and a cover in which openings are provided for receiving felt pens, characterized in that in the ink container **(3)** a suction funnel **(20)** is disposed comprising a funnel cone **(21)** which is in contact at its outer edge **(23)** with the inner wall of the ink container **(3)** and a suction tube **(22)** which adjoins the funnel cone **(21)**, projects towards the container bottom and terminates just above the latter, that in the funnel cone **(21)** and in the suction tube **(22)** a suction body **(25)** is disposed, that over the funnel cone **(21)** an ink pad **(26)** in contact with the suction body **(25)** is disposed, and that the suction funnel **(20)** and the ink pad **(26)** are fixedly anchored in the ink container **(3)**.

4,614,164

AUTOMATIC PAINTING SYSTEM

Yoshito Kato; Shuichi Sunahara, and Susumu Kurebayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 17, 1984, Ser. No. 682,101

Claims priority, application Japan, Jan. 30, 1984, 59-14850

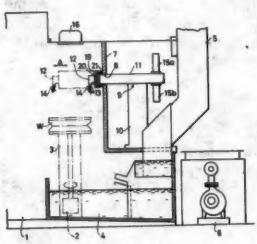
Int. Cl.[4] B05B *15/06, 15/08*

U.S. Cl. 118—323 **6 Claims**

1. An automatic painting system comprising:

a painting booth having a side wall with an opening formed therein;

a non-explosion-proof automatic painting machine disposed in an ambient atmosphere outside of said painting booth and having an arm housing positioned in said opening and which extends to a position located within said painting booth and a movable arm having a first portion housed within said arm housing and a second portion extended from said arm housing to a position within said painting booth;



a bellows open at one end and closed at an opposite end and mounted on and extending between a distal end of said movable arm and an inner surface of said side wall around said opening so as to be exposed via said open end of said bellows to said ambient atmosphere outside said painting booth for protecting a portion of said arm which is slidable with respect to said arm housing from an atmosphere in said painting booth and wherein an outer wall of said housing and an edge portion of said side wall form a clearance gap therebetween; and

a spray gun connected to said movable arm at a position outside said bellows.

4,614,165

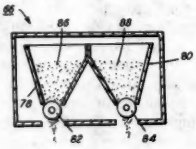
EXTENDED LIFE DEVELOPMENT SYSTEM

Jeffrey J. Folkins, Rochester; Cyril G. Edmunds, and Steven C. Hart, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1985, Ser. No. 801,366

Int. Cl.[4] G03G *13/09*

U.S. Cl. 118—657 **24 Claims**



1. An apparatus for developing an electrostatic latent image employed in a printing machine having a finite usable life, including:

means for transporting a developer material comprising at least carrier granules and toner particles into contact with the electrostatic latent image;

a housing defining a chamber having a supply of developer material therein, said transporting means being in communication with the chamber of said housing for receiving developer material; and

means for discharging toner particles and carrier granules into the chamber of said housing with the carrier granules being added to the chamber of said housing so that the usable life of the developer material is at least equal to the usable life of the printing machine and with the ratio of

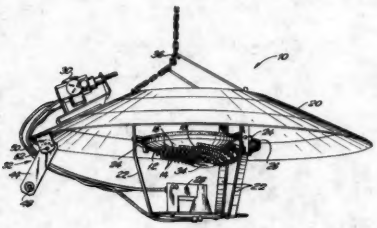
toner particles to carrier granules by weight being supplied to the chamber of said housing being substantially greater than the ratio of toner particles to carrier granules by weight in the chamber of said housing.

4,614,166

POULTRY BROODER

Paul E. Maurice, 14 Fontaine St., Ludlow, Mass. 01056

Filed Oct. 29, 1984, Ser. No. 666,115
Int. Cl.[4] A01K *31/20*
U.S. Cl. 119—32 **17 Claims**



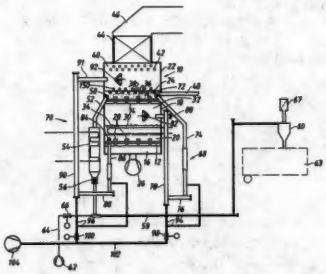
1. A poultry brooder heat radiating element comprising an inverted frustoconically-shaped radiant element having multiple projections protruding from and substantially covering the bottom surface of said radiant element in a plurality of spaced spiral rows, said multipie projections being connected by connecting means to define heat channelling means consisting of a plurality of circuitous passageways on said bottom surface, whereby heated gases traversing said bottom surface travel through said circuitous passageways.

4,614,167

COMBUSTION CHAMBER HAVING BEDS LOCATED ONE ABOVE THE OTHER AND A METHOD OF CONTROLLING IT

Jörgen Bergkvist, Finspong, Sweden, assignor to Asea Stal AB, Sweden

Filed Nov. 18, 1985, Ser. No. 799,074
Claims priority, application Sweden, Nov. 16, 1984, 8405746
Int. Cl.[4] B09B *3/00*
U.S. Cl. 122—4 D **10 Claims**



1. A boiler plant provided with a multibed combustion chamber, which combustion chamber includes

a first lower combustion chamber space delimited by a first bottom support means adapted to support a first bed of fluidizable bed material and housing a nest of tubes for extracting heat from the first bed material,

a second upper combustion chamber space delimited by a second bottom support means adapted to support a second support bed of fluidizable bed material,

an air plenum chamber below the first bottom support means,

nozzles in the first bottom support means for transferring combustion air from the air plenum chamber to the first lower combustion chamber space,

means to feed fuel to the first combustion chamber space, and

nozzles in the second bottom support means for transferring combustion gases from the first lower combustion chamber space to the second upper combustion chamber space,

which plant further includes

a first bed material transport means for transferring bed material downwardly from the second upper combustion chamber space to the first lower combustion chamber space,

a second bed material transport means for transferring bed material upwardly from the first lower combustion chamber space to the second upper combustion chamber space,

measuring means for measuring the actual thermal load outputting from the plant, and

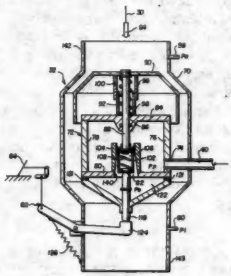
control means for controlling the depth of bed material in the lower combustion chamber space in dependence on the measured thermal output load by transferring bed material from one combustion chamber to the other via one of said first and second bed material transport means.

4,614,168

CONTROL VALVE FOR DUAL FUEL OPERATION OF AN INTERNAL COMBUSTION ENGINE

William H. Batchelor, Jensen Beach, Fla., assignor to Propane Carburetion Systems, Inc., Stuart, Fla.

Division of Ser. No. 576,428, Feb. 2, 1984, Pat. No. 4,535,728. This application Apr. 19, 1985, Ser. No. 724,831
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—27 GE **8 Claims**



1. A control valve for a supplemental fuel supply to an internal combustion engine provided with a primary liquid fuel supply, comprising a valve housing provided with an air duct extending the length of the housing and having inlet and outlet ends; a movable air flow responsive member in said duct responsive to air flowing through said duct towards said outlet end so as to be deflected in a first direction in response to such air flow; means for resiliently biasing said air flow responsive member in a direction opposite to said first direction; a supplemental fuel inlet in said housing; a supplemental fuel passageway in said housing to provide communication between said supplemental fuel inlet and said air duct at a point between said air flow responsive member and the outlet end of said duct; a valve element for controlling said supplemental fuel flow through said passageway, said valve element movable between closed and open positions in response to the movement of said air flow responsive member between undeflected and deflected positions, respectively, said valve element being movable between said open and said closed positions independently of said

air flow responsive member; and fluidic damper means for damping the motion of said air flow responsive member.

4,614,169

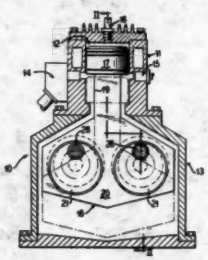
ULTRA HIGH COMPRESSION ENGINE

Vincent D. Figliuzzi, 315 S. Kenilworth, Elmhurst, Ill. 60126

Continuation of Ser. No. 502,516, Jun. 9, 1983, abandoned. This application Feb. 21, 1985, Ser. No. 703,460

Int. Cl.[4] F02B *75/26*

U.S. Cl. 123—54 R **19 Claims**



1. A reciprocating piston machine comprising a piston reciprocably movable in a cylinder having a crankcase and fluid inlet and outlet means connected thereto, a pair of oppositely rotatable crankshaft means disposed on opposed sides of the longitudinal axis of said cylinder within said crankcase and each crankcase means having an eccentric arm intersecting with a longitudinal plane of said cylinder, a one-piece translator means disposed in said longitudinal plane extending from said cylinder into said crankcase for moving in a true straight-line motion along said longitudinal axis, said translator means being connected to said piston for moving said piston in said cylinder and being spaced from said cylinder and said crankcase, a pair of rotary cam means respectively disposed for free eccentric rotation about each said eccentric arm and for free rotation on said translator means and arranged between each said eccentric arm and said translator means on opposite sides of said longitudinal axis along said longitudinal plane and relatively and differently movable of both said translator means straightline motion and said eccentric arm rotation for effecting said motion of said translator means, and a balance gear means connected to said eccentric arms for coinciding the rotation of said pair of crankshaft means.

4,614,170

METHOD OF STARTING A VALVE REGULATING APPARATUS FOR DISPLACEMENT-TYPE MACHINES

Franz Pischinger, and Peter Kreuter, both of Aachen, Fed. Rep. of Germany, assignors to Fev Forschungsgesellschaft fur Energietechnik und Verbrennungsmotoren mbH, Aachen, Fed. Rep. of Germany

Filed Mar. 1, 1984, Ser. No. 585,182

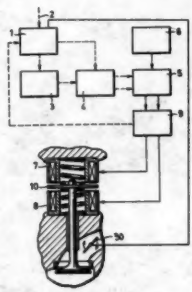
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1983, 3307070

Int. Cl.[4] F01L *9/04*

U.S. Cl. 123—90.11 **10 Claims**

1. Adjusting apparatus for a gas exchange valve of an internal combustion engine capable of being set in either of two terminal positions with an electro-magnet system which holds the valve in one of said terminal positions, a substantially disc-shaped armature connected with said valve which, when said electro-magnet system is deactivated, is held by the spring tension of springs at a static or rest position between said two terminal positions, said valve, springs, armature and electro-magnet system comprising an oscillatable spring-mass system having a predetermined natural frequency of oscillation, the improvement wherein means are provided for applying periodic pulsed force to said spring-mass system when in said static or rest position, the frequency of the pulsed forces being approximate to the natural frequency of oscillation of said spring-mass system so that said valve is induced to execute oscillations of increasing amplitude until one of said terminal positions is reached at which the adjusting apparatus achieves operational readiness.

4. Process for achieving operational readiness of an adjusting apparatus for a gas exchange valve of an internal combustion engine capable of being set in either of two terminal positions with an electro-magnet system which holds the valve in one of said terminal positions, a substantially disc-shaped armature connected with said valve which, when said electro-magnet



system is deactived, is held by the spring tension of springs at a static or rest position between said two terminal positions, said valve, springs armature and electro-magnet system comprising an oscillatable spring-mass system having a predetermined natural frequency of oscillation, the process comprising the step of, while in said static or rest position, applying periodic pulsed forces to said spring-mass system at a frequency which approximates the natural frequency of oscillation of said spring-mass system so that said valve is induced to execute oscillations of increasing amplitude until one of said terminal positions is reached at which the operational readiness is achieved.

4,614,171

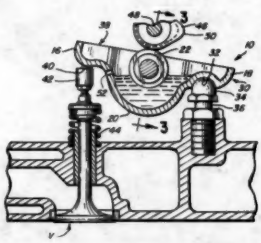
ROCKER ARM CONSTRUCTION

Shashi Malhotra, River Edge, N.J., assignor to W H Industries Inc., Northvale, N.J.

Filed Jul. 5, 1985, Ser. No. 751,965

Int. Cl.[4] F01L *1/18*

U.S. Cl. 123—90.44 **6 Claims**



1. A rocker arm for an internal combustion engine, said rocker arm mounting thereon a concentrically mounted cam roller engaging and rotating with a cam on the rotatable cam shaft of the engine, said rocker arm being elongated and having side and end walls and a bottom wall, and comprising an open, generally flat-topped tub-like container, one end of said rocker

arm being provided with a generally concave semi-spherical depression, so as to be supported on a complementary shaped semi-spherical member at a fixed height, and the other end of which engages the stem of a valve of said engine, said rocker arm being pivotable about its fixed height end by means of said cam engaging the cam roller to thus operate the valve, said rocker arm functioning as a reservoir for oil in which said cam roller rotates, said cam roller being rotatably mounted on a roller shaft journaled in circular openings in the side walls of said rocker arm and having anti-friction means comprising needle bearings surrounding its supporting shaft.

4,614,172

CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINE

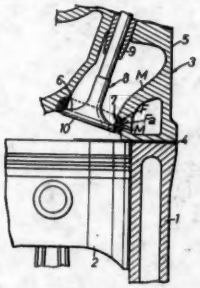
Tadayoshi Hayashi, Fujimi, and Hideaki Ushio, Turugashima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1985, Ser. No. 727,990

Claims priority, application Japan, May 28, 1984, 59-78132[U]

Int. Cl.⁴ F01L *3/02*

U.S. Cl. 123—188 S **5 Claims**



1. A cylinder head for an internal combustion engine, said cylinder head having a body with a valve seat formed therein, said valve seat comprising a plurality of reinforcing fibers cast in a metal matrix, said metal matrix being integrally formed with said body and consisting of the same material as said body.

4,614,173

INTAKE SYSTEM FOR ROTARY PISTON ENGINE

Haruo Okimoto, and Ikuo Matsuda, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 23, 1984, Ser. No. 613,356

Claims priority, application Japan, May 25, 1983, 58-93113

The portion of the term of this patent subsequent to Jan. 7, 2003, has been disclaimed.

Int. Cl.⁴ F02B *53/04*

U.S. Cl. 123—216 **7 Claims**

1. A multiple rotor type rotary piston engine comprising:

a casing comprised of

a plurality of rotor housings, each rotor housing having an inner wall of trochoidal configuration,

an intermediate housing located between each pair of adjacent rotor housings, and

a pair of side housings secured to outer sides of outermost rotor housings to define rotor cavities in the respective rotor housings,

a substantially polygonal rotor disposed in each of the rotor cavities with apex portions in sliding engagement with the inner walls of the respective rotor housings to define working chambers of cyclically variable volumes,

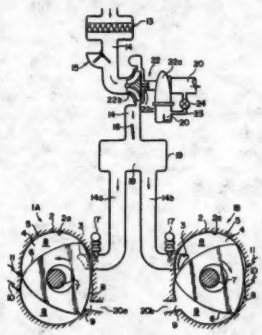
eccentric shaft means carrying said rotors so that said rotors are rotated with equal phase differences in terms of angle of rotation of said eccentric shaft means,

intake means including individual intake port means provided in at least one of said intermediate and side housings for opening to the respective rotor cavities and adapted to be cyclically closed by said rotors as the rotors rotate,

intake passage means including individual intake passage means leading respectively to said intake port means and communicating with each other by communicating passage means,

supercharging means located in said intake passage means upstream of said communicating passage means,

exhaust port means provided in said casing for opening to



the respective rotor cavities and communicating with exhaust passage means, and

intake pressure limiting means located downstream from the supercharging means for limiting intake pressure in said intake passage means below a predetermined value for producing an engine operating range where the intake pressure is lower than exhaust gas pressure, said individual passage means and said communicating passage means having a length so that a compression wave, produced at one intake port means for one rotor cavity when said one intake port means is opened, is transmitted to another intake port means for another rotor cavity just before said another intake port means is closed in at least a part of said engine operating range.

4,614,174

FUEL CONTROL MEANS FOR ENGINE INTAKE SYSTEMS

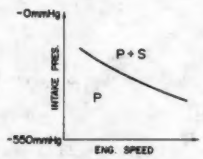
Yoshitaka Tanigawa, Higashihiroshima, and Yoshinori Okino, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 27, 1984, Ser. No. 686,921

Claims priority, application Japan, Dec. 29, 1983, 58-245895

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—478 **14 Claims**



1. An engine intake system including primary intake passage means leading to combustion chamber means, secondary intake passage means leading to said combustion chamber means, said

primary and secondary intake passage means being opened to the combustion chamber means through common intake port means, first fuel injection valve means provided in said primary intake passage means, second fuel injection valve means provided in said second intake passage means, passage control means having a first position wherein the passage control means substantially closes the secondary intake passage means so that intake air is passed substantially through the primary intake passage means and a second position wherein the secondary intake passage means is at least partially opened so that the intake air is passed through both the primary and secondary intake passage means, fuel supply control means for controlling said first and second fuel injection valve means so that fuel is supplied substantially through said first fuel injection valve means in a first fuel supply mode and through both the first and second fuel injection valve means in a second fuel supply mode, said fuel supply control means including first means for determining a basic quantity of fuel supply in accordance with engine operating conditions, second means including map means having predetermined compensation factors corresponding respectively to different engine operating conditions for modifying the basic quantity respectively under relevant engine operating conditions, said compensation factors in said map means being classified into a first group substantially corresponding to an engine operating condition wherein the passage control means is in said first position, and a second group substantially corresponding to an engine operating condition wherein the passage control means is in the second position, the factors in said first group being determined so that a desired air-fuel ratio can be obtained in said first fuel supply mode, the factors in said second group being determined so that a desired air-fuel ratio can be obtained in said second fuel supply mode, said fuel supply control means including means for taking said first fuel supply mode when the compensating factor of the first group is selected and said second fuel supply mode when the compensating factor of the second group is selected.

4,614,175

ENGINE EXHAUST GAS RECIRCULATION CONTROL SYSTEM

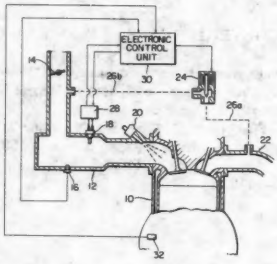
Yoshiaki Asayama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 685,157

Claims priority, application Japan, Dec. 27, 1983, 58-246873; Mar. 17, 1984, 59-51824

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—571 **13 Claims**



5. An exhaust gas recirculation control system for an engine comprising:

a rotational speed sensor for sensing rotational speed of the engine;

a pressure sensor for sensing pressure in an inlet pipe of the engine;

an exhaust gas recirculation control valve for controlling an amount of exhaust gas recirculated from an exhaust pipe of the engine to the inlet pipe;

an oxygen sensing means for sensing oxygen concentration of a gas mixture of inlet air flowing in the inlet pipe and said recirculated exhaust gas; and

control means responsive to said oxygen sensing means for controlling opening of said exhaust gas recirculation control valve to recirculate said exhaust gas at a recirculation rate predetermined according to the engine speed and inlet pipe pressure sensed by said sensors.

4,614,176

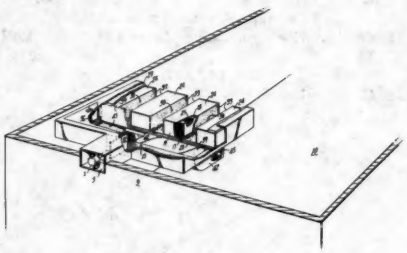
CATALYTIC METAL HYDRIDE SPACE HEATER

Arthur S. Kesten, W. Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 23, 1985, Ser. No. 790,683

Int. Cl.[4] F24H *3/02*

U.S. Cl. 126—110 R **1 Claim**



1. An apparatus for heating comprising a fuel storage means and wall means forming a combustion area wherein the improvement comprises:

(a) said fuel storage means comprising a metal hydride fuel;

(b) said wall means forming said combustion area containing a catalyst thereon;

(c) said wall means forming said combustion area being in direct proximity to said metal hydride fuel storage means;

whereby combustion heat passes into said metal hydride fuel storage means affecting the release of hydrogen from the metal hydride;

(d) means for controllably supplying air to said combustion area;

(e) said fuel storage means including a semipermeable membrane through which hydrogen may pass;

(f) means for conveying hydrogen from said semipermeable membrane to said combustion area; and

(g) means for discharging products from said combustion area to an area to be heated.

4,614,177

MULTI FEATURE RANGE HOOD

Norman A. Buckley, Cheektowaga, N.Y.; Roland E. Butt, West Bend, and Donald E. Schlegel, Brookfield, both of Wis., assignors to Broan Mfg. Co., Inc., Hartford, Wis.

Filed May 3, 1984, Ser. No. 606,526

Int. Cl.[4] F24C *15/20*

U.S. Cl. 126—299 R **14 Claims**

1. A range hood mounted above a kitchen range for collecting and exhausting cooking vapors comprising:

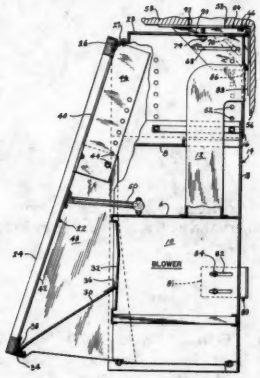
a housing;

a blower compartment in the lower portion of said housing, said blower compartment having associated ductwork for exhausting cooking vapors;

a plurality of storage shelves in said housing, a first of said shelves being the top of said blower compartment, a second of said shelves being disposed thereabove; and

a tilt-out front panel hinged at the top of said housing to have

an extended tilted-out position increasing the collection area above said range and having a pushed-in flush posi-



tion, said front panel having openable doors for accessing said storage shelves.

4,614,178

AUTOMATIC DOSE METER AND CONTROL CIRCUIT ARRANGEMENT

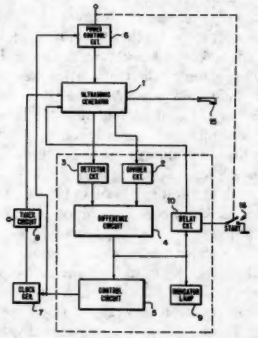
János Harlt, and László Hancz, both of Budapest, Hungary, assignors to Orvosi Muszerszovetkezet, Hungary

PCT No. PCT/HU81/00019, § 371 Date Jan. 5, 1983, § 102(e) Date Jan. 5, 1983, PCT Pub. No. WO82/03779, PCT Pub. Date Nov. 11, 1982

Continuation of Ser. No. 459,574, Jan. 5, 1983, abandoned. This PCT application May 6, 1981, Ser. No. 750,983

Int. Cl.[4] A61H *1/00*

U.S. Cl. 128—24 A **6 Claims**



1. An automatic dose meter and control circuit for switching mode of operation, and for use with an ultrasonic therapeutic apparatus including a treatment head (**15**), an ultrasonic generator (**1**) for generating ultrasonic energy for said treatment head and comprising a plurality of inputs and a plurality of outputs, said treatment head being connected to one of said outputs of said ultrasonic generator, another one of said outputs delivering a signal proportional to the change in the intensity of the ultrasonic energy delivered by the treatment head to a patient's body, a power control circuit (**6**) for controlling the level of ultrasonic energy generated by said ultrasonic generator and having and input and an output; said output of said power control circuit is connected to one of said inputs of said ultrasonic generator, a detector circuit (**3**) having an input and an output, said input of said detector circuit receiving said output signal proportional to the change in the intensity of the ultrasonic energy delivered to the patient of the ultrasonic generator from said another output thereof, said detector circuit providing at said output thereof an output signal proportional to the intensity of the ultrasonic energy delivered to the patient's body, a divider circuit (**2**) having an input and an output, said input of said divider circuit receiving and dividing the output signal proportional to the change in the intensity of the ultrasonic energy delivered to the patient of said ultrasonic generator and providing at said output thereof an output signal equal in magnitude to the output signal of the detector circuit in the absence of coupling between the treatment head and the patient's body, a control circuit (**5**) comprising an input and output, the input of said power control circuit is connected to the output of said control circuit, a difference circuit (**4**) comprising a pair of inputs and an output, said output signal of said ultrasonic generator (**1**) being coupled via said detector circuit (**3**) to an input of said difference circuit (**4**), another of the outputs of said ultrasonic generator (**1**) providing an output signal proportional to the intensity of the ultrasonic energy measured on the patient's body is connected via said divider circuit (**2**) to another input of said difference circuit (**4**), the outputs of said detector circuit and said divider circuit are coupled to the input of said control circuit (**5**), the output of said difference circuit (**4**) is connected to the input of said control circuit (**5**), said control circuit outputting a signal for controlling said power control circuit and, thereby said ultrasonic generator solely as a function of compling between said treatment head and the patient's body.

3. An automatic dose meter and control circuit for analog mode of operation, and for use with an ultrasonic therapeutic apparatus including a treatment head (**15**), an ultrasonic generator (**1**) for generating ultrasonic energy for said treatment head and comprising a plurality of inputs and a plurality of outputs, said treatment head being connected to one of said outputs of said ultrasonic generator, another one of said outputs delivering a signal proportional to the intensity of the ultrasonic energy delivered by the treatment head to a patient's body, a power control circuit (**6**) for controlling the level of ultrasonic energy generated by said ultrasonic generator and having an input and an output, said output of said power control circuit is connected to one of said inputs of said ultrasonic generator, a detector circuit (**3**) having an input and an output, said input of said detector circuit receiving said output signal proportional to the change in the intensity of the ultrasonic energy delivered to the patient of the ultrasonic generator from said another output thereof, said detector circuit providing at said output thereof an output signal proportional to the change in intensity of the ultrasonic energy delivered to the patient's body, a first divider circuit (**2**) having an input and an output, said input of said first divider circuit receiving and dividing the output signal proportional to the change in the intensity of the ultrasonic energy delivered to the patient of said ultrasonic generator and providing at said output thereof an output signal equal in magnitude to the output signal of the detector circuit in the absence of coupling between the treatment head and the patient's body, a control circuit (**5**) comprising two inputs and an output, a difference circuit (**4**) comprising a pair of inputs and an output, said signal proportional to the change in intensity of the ultrasonic energy measured at the patient's body is coupled via said detector circuit (**3**) to one of said inputs of said differen[illegible] circuit (**4**); another of the outputs of said ultrasonic generator (**1**) providing an output signal porportional to the intensity of the ultrasonic energy measured at the treatment head (**15**) is coupled via said first divider circuit (**2**) to another input of said difference circuit, a second divider circuit (**14**) comprising input and output means, said another output of said ultrasonic generator being connected to the input means of said second divider circuit (**14**); and the output of said second divider circuit (**14**) is connected to the input of said control circuit (**5**) and delivering an output signal

equal in magnitude to the output signal of the difference circuit in the presence of full coupling, the output of said difference circuit (4) outputting a signal representing a predetermined ratio of coupling, said output signal of said difference circuit being connected to the input of said control circuit (5), said control circuit comparing the output signal of said difference circuit (4) and of said second divider circuit (14) and delivers a control signal proportional either to the difference or solely to the coupling for controlling the power level of said ultrasonic generator.

4,614,179

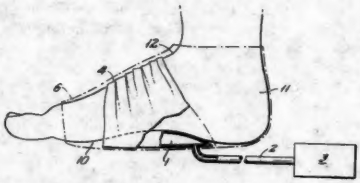
MEDICAL APPLIANCE

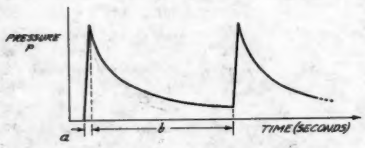
Arthur M. N. Gardner, Ipplepen, and Roger H. Fox, Totnes, both of England, assignors to Electro-Biology, Inc., Fairfield, N.J.

Continuation of Ser. No. 763,686, Aug. 8, 1985, which is a continuation-in-part of Ser. No. 621,499, Jun. 18, 1984, and a continuation-in-part of Ser. No. 751,150, Jul. 2, 1985, abandoned, which is a division of Ser. No. 621,499, Jun. 18, 1984. This application Nov. 4, 1985, Ser. No. 794,443

Int. Cl.[4] A61H *7/00*

U.S. Cl. 128—64 **16 Claims**





3. The method of promoting venous pump action in the leg of a living body, which method comprises establishing a peripherally continuous confinement of the midtarsal and plantar regions of a foot, and shrinking the confinement in a cyclical pattern of relatively rapid short-duration shrink action followed by a relatively long-duration release from shrink action.

4,614,180

MEDICAL APPLIANCE

Arthur M. N. Gardner, and Roger H. Fox, both of Devon, England, assignors to Electro-Biology, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 621,499, Jun. 18, 1984, abandoned. This application Aug. 8, 1985, Ser. No. 763,686

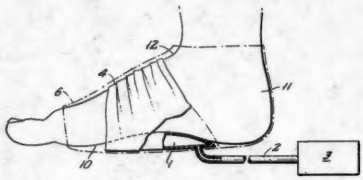
Int. Cl.[4] A61H *7/00*

U.S. Cl. 128—64 **28 Claims**

7. A medical appliance comprising an inflatable bag shaped for active engagement solely with a human foot and substantially only in the region between the ball and the heel of the foot, and cyclically operable automatic means for delivering pressure within said bag in accordance with the following criteria:

(a) a pressure rise to a predetermined maximum of 220-mm Hg or less within less than two seconds;

(b) upon achievement of said maximum, dropping the pressure at least to one seventh of said maximum pressure within approximately one second; and



(c) repeating pressure delivery pursuant to criteria a and b at a periodic interval which is in the range of 5 to 60 seconds.

4,614,181

HINGE FOR KNEE JOINT BANDAGE

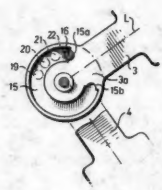
Thomas Karlsson, Stockholm, Sweden, assignor to Rehband Anatomiska AB, Stockholm, Sweden

Filed Nov. 7, 1984, Ser. No. 669,205

Claims priority, application Sweden, Nov. 8, 1983, 8306138

Int. Cl.[4] A61F *5/01*

U.S. Cl. 128—80 C **6 Claims**



1. A hinge device for a knee joint bandage, comprising first and second elongated links (3, 4) adapted to be secured to supporting sleeves (2, 3) above and below a user's knee, respectively, and connected to each other for mutual pivoting movement in a plane by means of a pivot pin (18), said links having at least partially overlapping flat end portions (3*a*, 4*a*) adjacent to said pivot pin, said links being flat over their entire length, the end portion (4*a*) of said second link (4) being parallely displaced by a distance substantially corresponding to the thickness of the first link, the rest of said links being arranged in a common plane, the end portion (4*a*) of said second link (4) being provided with a plurality of holes (19, 20, 21, 22) distributed about a circular arc about said pivot pin, a stop pin for insertion in said holes, a circular arcuate recess in the end portion of said first link, said recess having abutment means for cooperating with said stop pin to limit the end position of the pivoting movement of said links, wherein

(a) said circular arcuate recess (15) of said first link (3) extends along an angular range substantially in excess of 180°, said recess and two adjoining abutment surfaces (15*a*, 15*b*) being symmetrically located in relation to the longitudinal axis (L) of said first link (3);

(b) said plurality of holes (18, 20, 21, 22) selectively receiving said stop pin (16) and being symmetrically located in relation to the longitudinal axis (L') of said second link (4);

(c) said hinge device being securable to said supporting sleeves (1, 2) on either side of either knee of the user so as to limit the maximum knee joint angle to a selectable value determined by the positioning of said stop pin in a selected one of said holes;

(d) said recess is constituted by a slot with walls on both sides thereof.

4,614,182

APPLICATOR FOR UTERINE PESSARIES

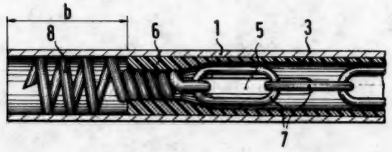
Manfred Boebel, Oetisheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,288

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1984, 3411768

Int. Cl.[4] A61F 5/46, 13/20

U.S. Cl. 128—130 7 Claims



1. An applicator for inserting a pessary into the uterus, which pessary comprises a chain attached at one end thereof to one end of a coil for screwing the pessary into the base of the uterus, the applicator comprising:

an inner shaft having a hollow leading end to receive the chain and to hold the end of the coil which is attached to the chain in a formlocked or forcelocked manner;

an outer tubular shaft receiving said inner shaft therein for axial displacement; and

a handle at the end of the outer shaft remote from said leading end for rotating the inner shaft to screw said leading end of the inner shaft out of said outer shaft with said coil in the longitudinal direction of the coil to screw the coil into the base of the uterus, said handle enables said outer shaft to be rearwardly displaceable on the inner shaft to release the chain.

4,614,183

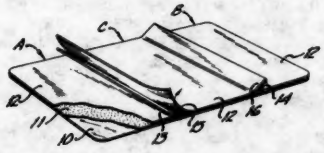
ADHESIVE FILM DRESSING

Robert W. McCracken, North Brunswick, and Linda A. Baesler, Chatham, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Continuation of Ser. No. 461,405, Jan. 27, 1983, abandoned. This application May 17, 1985, Ser. No. 735,306

Int. Cl.[4] A61L 15/00

U.S. Cl. 128—132 R 14 Claims



1. In a thin film surgical dressing comprising a thin polymeric film having on one surface a continuous coating of pressure sensitive adhesive, the improvement comprising covering the adhesive coated surface with three sections of backing material adapted to be removed from the dressing at the time of application, said sections of backing material comprising a center portion and two end portions, each of said end portions of said backing material having an edge flap adjacent the center portion folded back from the adhesive surface of said dressing, and the center portion having at least one edge flap adjacent an end portion positioned away from the adhesive surface of said dressing whereby said center portion of said backing material is readily removable before application of said dressing to a patient, and said end portions of said backing material are readily removable after the center portion of said dressing has been adhesively secured to said patient.

4,614,184

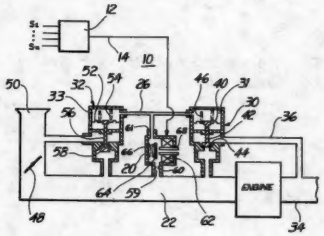
SINGLE SOLENOID CONTROL OF SEQUENTIAL MULTIPLE ACTUATORS

Kent G. Hansen, Chatham, Canada, assignor to Canadian Fram Limited, Chatham, Canada

Filed Jun. 22, 1984, Ser. No. 623,816

Int. Cl.[4] F02M 25/06

U.S. Cl. 123—571 13 Claims



7. A flow control system responsive to fluid pressure comprising:

means for varying the magnitude of said pressure within a plurality of pressure ranges;

a plurality of pressure responsive valves communicated with said pressure means and adapted to simultaneously receive said pressure, each said valve having at least two operative conditions, said valves including;

means responsive to a particular pressure range for sequentially changing the operative condition of a particular one of said valves in response to changes in the magnitude of pressure communicated thereto;

wherein said sequential means comprises:

variable volume pressure chamber one associated with each of said valves, defined by a flexible diaphragm and wherein each one of said valves further includes means for biasing its respective diaphragm in a manner to place said valve in one of its operative conditions and wherein said biasing means is operative to permit only one of said valves to change its operative condition at any particular instant as the pressure is varied through said pressure ranges.

4,614,185

PISTON ENGINE HAVING A PHOSPHATIZED CYLINDER WALL

Richard C. Fox, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 547,849, Nov. 2, 1983, abandoned. This application Apr. 26, 1985, Ser. No. 727,864

Int. Cl.[4] F02B 75/08

U.S. Cl. 123—668 7 Claims

1. A piston engine comprising:

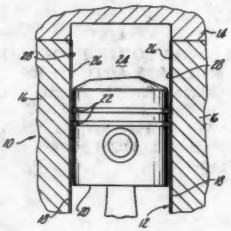
at least one cylinder head;

at least one steel cylinder attached to each of said at least one cylinder head, said at least one steel cylinder having an interior cylinder wall and a surface on said wall;

a piston disposed in each of said at least one steel cylinder; and

a piston ring disposed between said piston and said cylinder wall coacting against said surface;

wherein said cylinder wall bears means for inhibiting rust while reducing oil consumption during long term opera-



tion of the engine comprising an integral layer of crystalline phosphate on said surface.

4,614,186

AIR SURVIVAL UNIT

Tom T. John, St. Petersburg, Fla., assignor to Molecular Technology Corporation, Middlebranch, Ohio

Filed Nov. 19, 1984, Ser. No. 672,802

Int. Cl.[4] A62B *7/10*

U.S. Cl. 128—201.25 **14 Claims**

1. An air survival unit including:

(a) a transparent lightweight flexible hood adapted to completely cover the head of the wearer including sealing means for sealing the hood tightly about the neck or body of the wearer to form a generally airtight enclosure;

(b) a canister located completely within the airtight enclosure of the hood, said canister being formed with a chamber means containing a carbon dioxide and a water vapor adsorbents; and

(c) a mouthpiece attached to the canister for directing inhaled air from within the hood directly into the wearer's mouth through the mouthpiece and for directing exhaled air directly through the carbon dioxide and water vapor adsorbents before discharging it into the hood whereby most of the carbon dioxide and water vapor is removed from the exhaled air enabling the concentration of oxygen within the hood to deplete at a slower rate providing increased breathing time for the user.

4,614,187

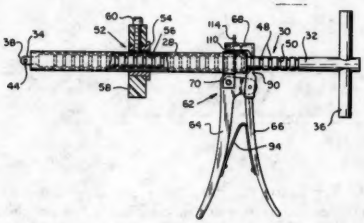
NEEDLE EXTRACTOR

James S. Mulhollan, 3401 Foxcroft Rd., Little Rock, Ark. 72207, and Lionel Starr, 8806 Patricia Lynn, Sherwood, Ark. 72116

Filed Apr. 2, 1984, Ser. No. 595,819

Int. Cl.[4] A61B *17/50*

U.S. Cl. 128—303 R **5 Claims**



1. A surgical needle extractor for use in extracting elongated surgical needles from a remote, inaccessible location within a patient's body, comprising:

means for grasping the tip end of the surgical needle at said remote, inaccessible location comprising a rod member having at least one lateral hole passing through said rod near one end thereof,

means for guiding said grasping means to said remote location comprising a cannula extending from an accessible location to said inaccessible location,

means for bending and withdrawing said needle from said remote location along said guiding means comprising a ratchet mechanism secured to said cannula to engage said rod member after said tip end of said needle is positioned in said lateral hole, with said lateral hole extending beyond an end of said cannula at said inaccessible location, said engagement of said ratchet mechanism operable to extract said rod member from said cannula and to move said lateral hole to a position immediately adjacent an end of said cannula at said accessible location, and a ring member selectively movably securable to said cannula abuttable against the skin of the patient.

4,614,188

BALLOON CATHETER

Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077, and Edward M. Goldberg, 2250 Maple Hill Rd., Glencoe, Ill. 60022

Continuation of Ser. No. 572,446, Jan. 20, 1984, abandoned, which is a division of Ser. No. 285,781, Jul. 22, 1981, Pat. No. 4,444,188, which is a continuation-in-part of Ser. No. 178,305, Aug. 15, 1980, Pat. No. 4,351,341. This application Jun. 18, 1985, Ser. No. 746,249

Int. Cl.[4] A61M *25/00*

U.S. Cl. 128—348.1 **6 Claims**

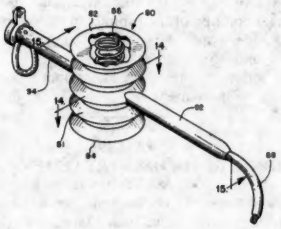
1. In an elongated, single lumen, balloon catheter for insertion in a body passage, the catheter including an elongated flexible support structure having distal and proximal ends that includes an elongated, flexible, coil spring means whose interior surface bounds a single, elongated, lumen of the catheter, and through which lumen a pressurizing fluid is to be selectively supplied, and with external resilient sheath means surrounding, and supported on, the exterior of the elongated coil spring means, and with an annular, inflatable, resilient balloon means also provided as part of the resilient covering of the coil spring support structure and being in fluid communication only with the catheter's lumen;

the improvement comprising, in combination:

the annular inflatable balloon means being located adjacent the distal end of the catheter and being sized, when deflated, to be selectively insertable with its supporting

catheter structure into a selected body passage of a subject;

an inflation means for said inflatable balloon being connected to the support structure adjacent the proximal end thereof that is intended to be positioned outside the body of the subject, said inflation means including a fluid containing chamber that is in communication, through said single lumen of the catheter, with the inflatable balloon located in a subject's selected body passage;



said fluid containing chamber having at least one thin and flexible, deformable wall adapted to be manipulated by digital pressure supplied by the user of the catheter said chamber including means to provide direct control of the inflation pressure in the catheter's single lumen and in the balloon by manual pressure applied to said flexible wall, said thin and flexible deformable wall being also operative to provide means for tactile sensing of fluid pressure variation within the fluid containing chamber that is responsive to variations in pressure developed in the distal inflated balloon that is positioned in the body of the subject.

4,614,189

FACIAL TREATMENT MASK

Virginia B. MacKenzie, 1520 W. Horseshoe Bend, Rochester, Mich. 48064

Filed Sep. 4, 1984, Ser. No. 646,776

Int. Cl.[4] A61F *7/08, 7/10*

U.S. Cl. 128—380 **4 Claims**

1. A treatment mask for applying heat or cold to the facial area. said treatment mask comprising:

an enclosed fluid reservoir with sealingly engaged inner and outer walls wherein said reservoir has two elliptical passages which conform substantially to the shape of the human eye extending therethrough and wherein said inner and outer walls are sealingly engaged at the periphery of said passages;

wherein said fluid reservoir includes a substantially triangular notch removed from the lower portion of said fluid reservoir and wherein said notch conforms to the bridge of the human nose whereby said mask is at least partially supported by the bridge of the nose when said mask is applied to the face;

an annular port comprising a rigid cylinder disposed between said inner and outer walls of said fluid reservoir at the top of said reservoir;

a plug for sealing said annular port wherein said plug and said cylinder are threaded and wherein said plug threadably engages said rigid cylinder; and

wherein said reservoir comprises an upper edge which extends laterally outwardly from both sides of the port, said upper edge having two ends, each end being spaced from said port,

wherein said reservoir comprises a pair of lower edges, each said lower edge sloping upwardly from a bottom of said notch and to one end of said upper edge, and

means for detachably securing said mask to the head comprising a pair of side straps, one end of each side strap being secured to one end of said top edge, and a top strap, one end of said top strap being secured to said top edge adjacent said port,

means for detachably securing the other ends of said straps in face abutting relationship together at a common point at the back of the head and,

said detachable securing means including adhesive material on the abutting faces of said other ends of said straps to enable one of said ends to be releasably sandwiched in between said other two ends.

4,614,190

PHOTORADIATION METHOD AND ARRANGEMENT

Alexei Stanco, 75A Angos Street, Adelaide, Australia (5000), and James A. Piper, Macquarie Uni., North Ryde, Sydney, New South Wales, Australia (2113)

PCT No. PCT/AU82/00151, § 371 Date May 9, 1983, § 102(e) Date May 9, 1983, PCT Pub. No. WO83/00811, PCT Pub. Date Mar. 17, 1983

PCT Filed Sep. 8, 1982, Ser. No. 495,354

Claims priority, application Australia, Sep. 8, 1981, PF0657

Int. Cl.[4] A61N *5/00*

U.S. Cl. 128—395 **5 Claims**

1. A method for treating living tissue, wherein the tissue contains an administered hematoporphyrin derivative for sensitizing the tissue to irradiation treatment, the method comprising the step of irradiating the tissue with pulsed electromagnetic energy from a laser having a wave length in the range of 626 to 636 nanometers, the energy having a power level with a peak value on the order of tens of kilowatts, but an average value only on the order of several watts, the peak value being sufficient to activate the hematoporphyrin derivative, but too small to effect general deterioration of surrounding tissue.

4,614,191

SKIN-COOLING PROBE

Robert F. Perler, 25 Lockwood Ave., New Rochelle, N.Y. 10801

Filed Sep. 2, 1983, Ser. No. 529,009

Int. Cl.[4] A61F *7/00*

U.S. Cl. 128—399 **15 Claims**

1. A skin-cooling probe, comprising:

(a) support means for performing a supporting function;

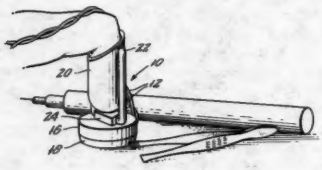
(b) a finger socket comprising a tube-like member, rigidly fixed to said support means at a point on said support means and adapted to receive the index finger of an operator;

(c) heat dissipation means for dissipating heat, said heat dissipation means having a base;

(d) mounting means rotably attaching said support means

with only one angular degree of freedom at a point on said heat dissipation means opposite the base of said heat dissipation means;

(e) cooling means rigidly fixed to the base of said heat dissipation means, said finger socket being rotable relative to said cooling means with only one angular degree of freedom to allow manipulation of said cooling means by said index finger and the pulling taut of skin by the thumb and middle finger of said one hand, whereby the other hand of the operator is free to use a tweezer and electrolysis probe and perform electrolysis without the picking up and putting down of instruments; and



(f) power supply means coupled to said cooling means.

4,614,192

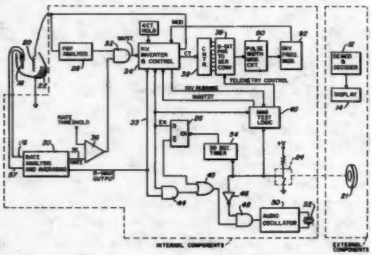
IMPLANTABLE CARDIAC DEFIBRILLATOR EMPLOYING BIPOLAR SENSING AND TELEMETRY MEANS

Mir Imran; Stanley M. Bach, Jr., both of Pittsburgh, and Steve A. Kolenik, Leechburg, all of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation-in-part of Ser. No. 370,191, Apr. 21, 1982, abandoned. This application Mar. 23, 1983, Ser. No. 478,038

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 D **16 Claims**



1. An implantable defibrillation system for automatically defibrillating the heart of a patient comprising:

detecting means for detecting fibrillation of the heart;

defibrillation means responsive to said detecting means for generating and applying to said heart at least one high-energy defibrillating pulse, said defibrillating means including a storage capacitor and a high voltage inverter means for charging said storage capacitor, said high voltage inverter means capable of emitting radio frequency (RF) signals during the charging of the storage capacitor, said RF signals capable of being detected externally of the patient;

counting means responsive to said defibrillating means for maintaining defibrillating pulse count information and for providing the pulse count information to a telemetry means;

telemetry means connected to said counting means and said high voltage inverter means for receiving the pulse count information and for transmitting information signals indicative of said pulse count information externally of the patient, wherein said telemetry means includes frequency modulation means for frequency modulating the RF signals emitted by said inverter means during the charging of said storage capacitor in accordance with the pulse count information, said telemetry means being responsive to a telemetry control signal to transmit said information signals;

control means for receiving an activation signal generated externally of the patient and, in response to said activation signal, for providing an inverter start signal to said high voltage inverter means to initiate the running of said inverter means and to discharge said storage capacitor upon completion of the running of the inverter means, and to provide a telemetry control signal to said telemetry means; and

external activation means for generating an activation signal external of the patient.

4,614,193

ELECTRONIC GLAUCOMA TREATMENT APPARATUS AND METHODOLOGY

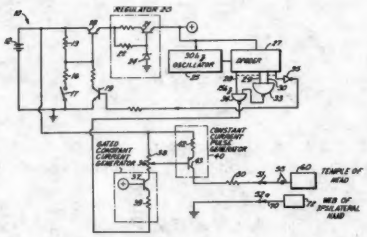
Saul Liss, and Bernard Liss, both of Glen Rock, N.J., assignors to Pain Suppression Labs, Inc., Elmwood Park, N.J.

Continuation-in-part of Ser. No. 569,476, Jan. 9, 1984, Pat. No. 4,550,733. This application Jun. 7, 1984, Ser. No. 618,144

The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.[4] A61N *1/34*

U.S. Cl. 128—419 R **3 Claims**



1. A method for suppressing pain and reducing intra-ocular pressure associated with the disease glaucoma including the steps of securing a first electrode on the temple of the head, securing a second electrode to the web of the subject's ipsilateral hand, and supplying an electrical wave comprising a high frequency amplitude modulation to said first and said second electrodes.

4,614,194

IMPLANTABLE PULSE GENERATOR HAVING A SINGLE PRINTED CIRCUIT BOARD FOR CARRYING INTEGRATED CIRCUIT CHIPS THEREON WITH CHIP CARRIER MEANS

W. Kinzy Jones, Pembroke Pines, and Alvin H. Weinberg, Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Jan. 20, 1984, Ser. No. 572,312

int. Cl.[4] A61N *1/00*

U.S. Cl. 128—419 P **11 Claims**

1. An implantable pulse generator comprising:

a human implantable sealed housing of biocompatible material, a power supply and a pulse generator circuit mounted within said housing with said circuit being powered by said supply for supplying pulses, said curcuit including at least first and second integrated semiconductor chips, a single printed circuit mother board for carrying said chips, and chip carrier means mounted on said mother board and carrying said semiconductor chips, said chip carrier means including:

a unitized body comprised of a plurality of ceramic layers fused together, said body having oppositely facing major surfaces, a cavity disposed in a first of said major surfaces,

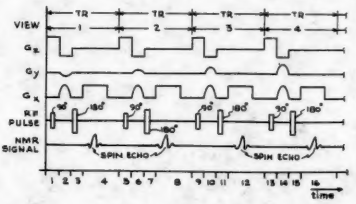
said first and second chips being mounted in said cavity, and a lid member covering and sealing said cavity so as to hermetically seal said chips therein.

4,614,195

METHOD FOR REDUCTION OF MOTION ARTIFACTS IN FOURIER TRANSFORM NMR IMAGING TECHNIQUES

Paul A. Bottomley, Clifton Park, N.Y., and Gary H. Glover, Waukesha, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 18, 1984, Ser. No. 683,071
Int. Cl.[4] A61B *5/05*
U.S. Cl. 128—653 **8 Claims**



1. A method of reducing artifacts due to periodic motion of a study object undergoing examination by Fourier transform NMR imaging techniques, which techniques employ, in the course of a scan of said object, a plurality of sequentially implemented views, wherein each view includes the steps of exciting magnetic resonance in said object and observing the resulting NMR signals, each view further includes application of a phase-encoding magnetic field gradient pulse along at least one dimensional axis of said object, said method comprising:

selecting the amplitude value of the phase-encoding magnetic field gradient pulse associated with each view, such that the temporal sequence of amplitude values is non-monotonic and performing a Fourier analysis on the observed NMR signals in sequential monotonic order based on values of the phase-encoding magnetic field gradient.

4,614,196

ULTRASONIC IMAGING APPARATUS USING SCALE CONTROL

Minoru Sato, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 22, 1985, Ser. No. 715,154
Claims priority, application Japan, Mar. 24, 1984, 59-55267
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **10 Claims**

6. An ultrasonic imaging apparatus for medically examining a subject, the ultrasonic imaging apparatus comprising:

transducer means for directing ultrasonic beams toward the subject under examination and for receiving ultrasonic echos of said beams reflected therefrom;

means coupled with said transducer means for processing the ultrasonic echos to obtain video signals representative of images of the subject;

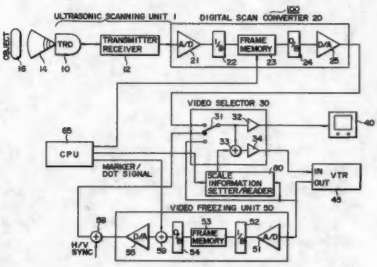
display means coupled with said processing means for displaying said video signals as an image of the subject on a television monitor;

scale setting means for producing a scale signal representative of a selected scale;

first mixing means coupled with said processing means and said scale setting means for producing composed video signals representative of a combination of said video signals and said scale signal;

video recorder means coupled with said first mixing means for recording said composed video signals;

reproducing means coupled with said video recorder means for reading said composed video signals from said video recorder menas, storing said video signals in a frame memory, and selectively reading said stored video signals from said frame memory into a format capable of displaying a play back image on said display means;



scale reader means coupled with said first mixing means for separating said scale signal from said composed video signals;

input means for producing an input measurement signal representative of at least one measurement taken from the subject being examined;

measurement means coupled with said scale reading means and said input menas for calculating from said scale signal and said input measurement signal a marker signal representative of the actual measurement values of the subject being examined; and

second mixing means coupled with said reproducing means, said measurement means, and said display means for producing a video signal representative of the image of an image of the subject being examined incombination with actual measurement values of the subject being examined and for transferring the produced video signal to said display means;

whereby an operator can obtain and view on the display means an image of the subject being examined and actual measurement values of the subject.

4,614,197

CHAFF SPREADING ARRANGEMENT FOR A COMBINE

Jerry L. Weber, Aledo, and Don L. Yarbrough, Coal Valley, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Oct. 15, 1984, Ser. No. 660,831
Int. Cl.[4] A01F *7/00*
U.S. Cl. 130—27 R **21 Claims**

1. A combine harvester for havesting grain crops and the like comprising:

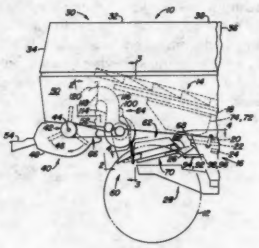
a mobile body housing a processor for processing harvested crop material including an inlet for receiving the harvested material and dividing and conveying means, including a sieve member, for dividing the crop material into straw, chaff and grain fractions and discharging said

fractions at straw, chaff and grain outlets, respectively, the chaff outlet being adjacent the sieve member;

a harvesting header carried by the body for gathering crop material from a field and delivering it to the inlet of the processor;

a straw spreader carried by the body and having an inlet in a receiving relationship with the discharge from the straw outlet for receiving the straw fraction and delivering it generally rearwardly; and

a pneumatic conveyor, having an inlet and an outlet, for intercepting at least a portion of the chaff fraction adja-



cent the chaff outlet and delivering it to the inlet of the straw spreader for mixing with the straw fraction of crop material and wherein, adjacent the chaff outlet, the chaff fraction has a flow direction and wherein the pneumatic conveyor includes a blower for drawing outside air through the pneumatic conveyor inlet and wherein there is a downwardly opening space between the chaff outlet and the pneumatic conveyor inlet allowing heavier material to bypass the pneumatic conveyor inlet and fall downwardly towards the ground but said inlet is disposed adjacent the chaff outlet so that at least a portion of the chaff fraction is drawn into the inlet along with outside air.

4,614,198

FILTER CIGARETTE MANUFACTURE

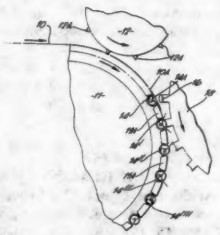
Dennis Hinchcliffe, London, England, and Francis A. M. Labbe, Neuilly-sur-Seine, France, assignors to Molins, PLC, London, England

Filed May 24, 1984, Ser. No. 613,629

Claims priority, application United Kingdom, May 25, 1983, 8314509

Int. Cl.[4] A24C *5/47*

U.S. Cl. 131—94 **18 Claims**



1. A method of making oval filter cigarettes comprising the steps of forming rod groups each comprising at least one cigarette portion and at least one filter portion in axial alignment; placing each rod group on a wrapping member rotatably carried by a conveyor having a succession of such wrapping members, each group being provided with a portion of tipping paper overlapping the members of the group; and rotating each wrapping member with respect to the conveyor about an axis parallel to and spaced from that of the rods to thereby carry said rod group bodily about said axis so as to wrap the tipping paper at least partly around the corresponding rod group.

6. A machine for assembling oval filter cigarettes comprising means for forming rod groups each comprising at least one cigarette portion and at least one filter portion in axial alignment, a conveyor having rotatably mounted thereon a plurality of similar wrapping members, means for feeding portions of adhesive-coated tipping paper and rod groups successively onto the wrapping members such that each rod group is provided with a portion of tipping paper overlapping the components of the group for adhesion thereto, and means for rotating each wrapping member with respect to the conveyor about an axis parallel to and spaced from that of the rods so as to carry said rod group bodily about said axis for wrapping the tipping paper at least partly around the rod group.

4,614,199

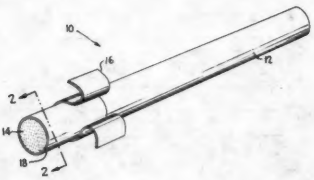
SMOKE FILTER HAVING EXTENDED FILM OVERWRAP AND METHOD AND APPARATUS FOR FABRICATING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 333,815, Dec. 23, 1981, Pat. No. 4,499,912, and a continuation-in-part of Ser. No. 333,802, Dec. 23, 1981, Pat. No. 4,423,744. This application Nov. 23, 1982, Ser. No. 444,056

Int. Cl.[4] A24D *3/04*

U.S. Cl. 131—362 **9 Claims**



1. A smoke filter comprising:

a smoke pervious plastic filter rod of filamentary cellulose acetate material extending longitudinally between a smoke receiving end and a smoke discharging end, said filter rod having at least one transverse dimension of predetermined length; and

a smoke impervious overwrap in the form of

a discrete film extrudate of nonfilamentary cellulose acetate material circumferentially surrounding the entire periphery of said filter rod between said smoke receiving end and said smoke discharging end, said film extrudate having a thickness which is at least 100 times smaller than said predetermined length.

4,614,200

HAIR TREATING METHOD AND COMPOSITION

Du Y. Hsiung, Park Forest; Billye J. Branch, Country Club Hills, and Jayaseelan Rathnam, Des Plaines, all of Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jun. 30, 1983, Ser. No. 509,648

Int. Cl.[4] A45D *7/00*

U.S. Cl. 132—7 **2 Claims**

1. A method of treating hair for purposes of strengthening and improving the physical properties thereof comprising the steps of contacting the hair with an aqueous hair treating composition having a pH value of about 2 to about 7 and including about 0.001 to about 10 weight percent of a water-dispersible, non-toxic polyvalent metal salt of a mineral acid selected from the group consisting of aluminum sulfate, aluminum chloride, cerium (III) nitrate, ferric chloride, ferric sulfate, ferric nitrate, aluminum chlorohydrate, a propylene gly-

col coordination complex of aluminum chlorohydrate, a coordination complex of aluminum zirconium tetrachlorohydrate and glycine and mixtures thereof, rubbing the composition into the hair and maintaining said composition thereon for a period of at least 6 to about 24 hours.

4,614,201

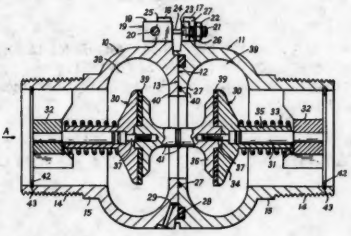
BREAK-AWAY COUPLING FOR HOSELINES

Frank E. King, 5, Faraday Road, Peterlee, Co. Durham; Joseph Estebanez, Dartans, 113 Lache Lane, Chester, and Reginald W. Lang, 34, Sandholme Drive, Burley-in-Wharfedale, Ilkley, W. Yorkshire, all of England

Continuation of Ser. No. 273,515, Jun. 15, 1981, abandoned. This application Jan. 16, 1984, Ser. No. 571,161

Int. Cl.[4] F16K *17/14*

U.S. Cl. 137—68.1 **3 Claims**



1. A break-away coupling device for use with a hoseline or pipeline, comprising a first coupling member of generally tubular form for connection at its one end to a length of hoseline or pipeline and provided at its other end with a face to be held in sealing engagement with a complementary face of a second coupling member, and frangible means holding said faces in sealing engagement, said first coupling member further comprising a valve seat and a valve member, spring means urging the valve member towards closing engagement with said seat, but the valve member usually being held against said spring means out of engagement with the valve seat until said coupling members are separated on breaking of the frangible means; said frangible means comprising a plurality of frangible connectors each of which has one end length of spatulate shape and formed with a through opening to receive a shear pin, a screwed length at the other end to receive a nut or the like, and an intermediate length of reduced section.

4,614,202

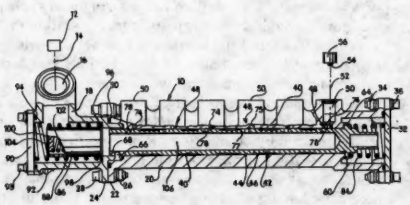
FUEL DISTRIBUTION VALVE

Robert M. Halvorsen, Birmingham, and Jeffrey B. Hurst, Troy, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 300,719, Sep. 10, 1981, abandoned. This application Apr. 30, 1984, Ser. No. 605,322

Int. Cl.[4] F16K *11/07*

U.S. Cl. 137—118 **5 Claims**



1. A fuel flow distribution valve for dividing and metering fuel flow from a fuel source to nozzles for supplying fuel to an engine comprising valve body means having an inlet and a plurality of outlets, intermediate liner means forming a longitudinal valve bore in said valve body means, said intermediate liner means having a reference surface thereon, a valve slidably supported in said valve bore slidable longitudinally therein and having a close tolerance diametral fit therewith, said valve having a positioning surface engageable with said reference surface and movable to a spaced apart position therefrom, spring means for biasing the valve in a first direction with respect to the liner means to engage the positioning surface and reference surface, means for directing inlet pressure against the valve in opposition to the spring means, a plurality of pairs of in line-machined flow metering ports in said liner means and value with the ports in each pair being congruent by virtue of being machined simultaneously with a common tool in said liner means and said valve when said valve is in a fixed position in said bore with said positioning surface spaced a preselected longitudinal distance from said reference surface to define a plurality of spaced pairs of congruent flow metering ports that independently meter fuel flow from said inlet to aligned ones of said plurality of outlets with each pair being in a first fuel control position when said positioning surface and reference surface are spaced apart by said preselected longitudinal distance and in a second fuel central position when said position surface and reference surface are engaged by bias of said spring means and each pair located in direct communication with a respective discharge port thereby to simplify internal manifolding and passages within said valve body, said pairs of flow metering ports being movable between the first fuel control position and second fuel control position to meter flow without precise, prealignment of ports in said valve with ports in said liner means.

4,614,203

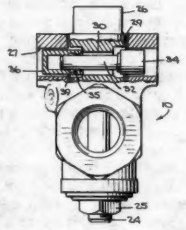
LOCKABLE VALVE

Onofrio N. Russo, Middle Village, N.Y., assignor to Gas Energy, Inc., Brooklyn, N.Y.

Filed Oct. 15, 1984, Ser. No. 661,118

Int. Cl.[4] F16K *35/06*

U.S. Cl. 137—385 **3 Claims**



1. A rotary plug valve capable of being locked in selected positions by an elongated locking pin having a first enlarged head on a reduced shank and a second separate enlarged cup-shaped head arranged to receive and be locked to the shank and released from the shank by a key axially inserted into the shank, said rotary valve comprising:

a body having a seat and provided with a flow passageway therethrough intercepted by said seat;

a valve member having a flow passage therethrough and being rotatable in said seat between a selected open position in which its flow passage registers with the flow passageway in said body and a selected closed position in which its flow passage does not register with the flow passageway in said body;

said body being formed with means defining a transverse bore therethrough of a diameter to receive the heads of the locking pin;

said valve member being provided with means defining a transverse bore arranged to be aligned with said bore in said body when said valve member is in a selected position for locking said valve member against movement relative to said valve body, said transverse bore in said valve member having a central portion of a diameter less than the diameter of the heads of the locking pin but sufficient to receive the shank thereof, and being enlarged at its ends to a diameter substantially equal to the diameter of said bore in said valve body so that a portion of each of the heads of the locking pin extends into a respective enlarged portion of said transverse bore in said valve member;

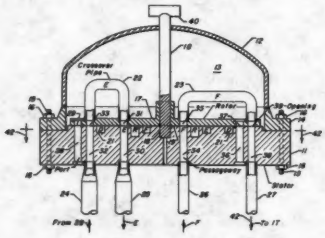
said bores being constructed and arranged so that the heads of the locking pin do not extend beyond the exterior of said valve body when the valve is locked.

4,614,204

ROTARY VALVE FOR INTERCONNECTING CONDUITS IN THREE GROUPS

Charles A. Dolejs, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 10, 1984, Ser. No. 679,779
Int. Cl.[4] F16K *11/074*; B01D *15/02*
U.S. Cl. 137—625.11 **5 Claims**



1. A multiport rotary valve for accomplishing the simultaneous interconnection of a plurality of conduits which are divded into a first, a second, and a third group of conduits in accordance with a previously determined cycle, where any conduit communicates with no more than one other conduit at any one valve index position, comprising:

(a) a discoid stator having said plurality of conduits connected to it, having a substantially flat seating surface, which seating surface comprises a portion of an interface region, which interface region has a plurality of grooves located concentrically about an axis of rotation, the stator further having a plurality of ports disposed in two circular rows around said axis of rotation and extending through the stator from said stator seating surface to another surface of the stator in order to communicate with a conduit, where said ports are divided into a first and a second group of ports and each port communicates with a conduit which is in a corresponding group of conduits, the number of ports being equal to the number of said conduits in said first and second groups of conduits and the stator further having a plurality of passageways, each extending from a groove through the stator to communicate with a conduit, where said passageways are equal in number to the number of grooves and each passageway communicates with a conduit of said third group of conduits;

(b) a discoid rotor having a seating surface which is in fluid-tight contact with said stator seating surface, which rotor seating surface comprises a portion of said interface region, and which rotor has a plurality of openings, each opening extending through the rotor to communicate with either a port or a groove, where said plurality of openings is equal in number to the total number of conduits and are divided into a first, a second, and a third set such that in each index position, each port of said first group in the stator is in register with a different one of the openings of said first set of rotor openings, each port of said second group in the stator is in register with a different one of the openings of said second set of rotor openings, and such that in every index position each of said grooves is in constant communication with a particular opening of said third set of rotor openings; and,

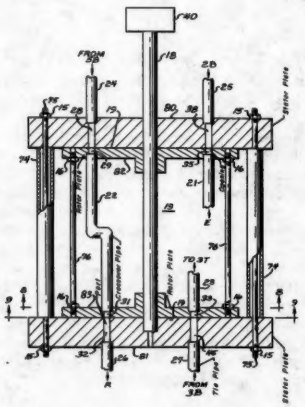
(c) a plurality of crossover pipes connected to the rotor at locations other than at said rotor seating surface, where said crossover pipes complete fluid transfer paths between conduits of said first and second groups, conduits of said first and third groups, and conduits of said second and third groups in accordance with said previously determined cycle, where that part of a fluid transfer path between a conduit and a crossover pipe comprises, for said first and second groups of conduits, a port and an opening, and comprises, for said third group of conduits, a passageway, a groove, and an opening.

4,614,205

ROTARY VALVE WITH TWO SEATING SURFACES FOR INTERCONNECTING CONDUITS

Anil R. Oroskar, Brookfield, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 10, 1984, Ser. No. 679,798
Int. Cl.[4] F16K *11/074*; B01D *15/02*
U.S. Cl. 137—625.11 **10 Claims**



1. A multiport rotary valve for accomplishing the simultaneous interconnection of a plurality of conduits in accordance with a previously determined cycle, where any conduit communicates, by means of the valve, with no more than one other conduit at any one valve index position, comprising:

(a) a stator assembly comprised of a first stator plate and a second stator plate, with said plates spaced apart and held rigidly in place by connecting means, each stator plate having a seating surface and a plurality of ports, which ports are disposed around an axis of rotation, each port extending through the stator plate from the seating surface to another surface of the stator, the number of ports being at least equal to the number of said conduits and each of said conduits communicating with a port;

(b) a rotor assembly comprised of a first rotor plate and a second rotor plate, with the plates spaced apart and held rigidly in place by connecting means, the first rotor plate having a seating surface which is in fluid-tight contact with said first stator plate seating surface, and the second rotor plate having a seating surface which is in fluid-tight contact with said second stator plate seating surface, which rotor assembly rotates about said axis of rotation to

various valve index positions in accordance with said previously determined cycle, where said axis of rotation passes through the center of both the stator assembly and rotor assembly and is normal to said seating surfaces, and which rotor plates have a plurality of openings, each opening extending from a rotor plate seating surface through the rotor plate to another surface of the rotor plate, the number of openings in the two rotor plates being at least equal to the number of said ports, with the openings disposed about the axis of rotation such that in each index position, each port of the stator plates is in register with a different one of the openings; and,

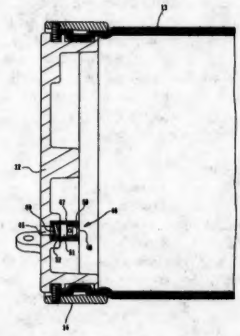
(c) a plurality of crossover pipes connected to the rotor plates, each crossover pipe communicating between an opening of the first rotor plate and an opening of the second rotor plate in order to complete fluid transfer paths between conduits in accordance with said previously determined cycle, where that part of a fluid transfer path between a conduit and a crossover pipe comprises a port and an opening, with the number of crossover pipes being at least equal to the number of ports.

4,614,206

EXPANSIBLE PNEUMATIC PLUG DEVICE

Allen D. Mathison, Richfield, and Dale K. Nelson, Minneapolis, both of Minn., assignors to Cherne Industries, Inc., Minneapolis, Minn.

Filed Nov. 14, 1985, Ser. No. 797,886
Int. Cl.[4] F16L *55/10*
U.S. Cl. 138—93 **16 Claims**



1. An expansible pneumatic plug device for sealing the interior of a pipeline section, said device having expansible body portions to permit the sealing of a predetermined range of pipeline diameters, said pneumatic plug device comprising:

a. interchangeable front and rear circular rigid support members for supporting the remaining elements of the device; each said rigid support member having a generally flat end portion and a body portion having parallelly disposed circumferential ridge members to form first and second grooved portions, said circumferential ridge members having top surfaces that lie in a plane of a predetermined inclined slope, at least one said rigid support member additionally having air inlet means;

b. an exteriorly smooth and interiorly corded elastomeric sleeve member for expansion to seal against the interior wall of a pipeline, said sleeve member having interiorly disposed parallel circumferential rings of a predetermined spacing inward its ends to engage said first and second grooved portions of said rigid support members, said sleeve member further having a plurality of apertures circumferentially disposed about its ends at predetermined locations,

c. a pair of strapping clamp members, each said clamp member for holding said sleeve member with its rings matingly between the parallel ridge members and in said second grooved portion of each said rigid support member during assembly of said device,

d. a pair of tapered end ring members having an interior frustoconical configuration of the same predetermined slope as said rigid support ridge members for frictionally engaging the sleeve member to said front and rear rigid support members, said end ring members further having a plurality of apertures disposed circumferentially at predetermined locations, and

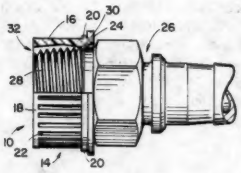
e. a plurality of set screw means for threading through said tapered end ring member apertures, for extending through said sleeve member apertures and for abutting in said first grooved portion of said rigid support member bodies to fix said end ring members to said rigid support members and to further fix said sleeve member ends therebetween.

4,614,207

THREAD PROTECTOR

Thomas C. Steinhagen, Westminster, Colo., assignor to The Gates Rubber Company, Colo.

Filed Nov. 10, 1980, Ser. No. 205,847
Int. Cl.[4] B65D *59/00*
U.S. Cl. 138—96 T **11 Claims**



5. A thread protector comprising:

a generally cylindrically shaped polymeric body having an axis and comprising a plurality of circumjacent ribs generally oriented with the body axis and defining a perforate sidewall;

a first circumferential ring interconnecting first ends of the ribs;

a second circumferential ring interconnecting second ends of the ribs; and

a retaining means juxtaposed one of the circumferential rings and integral with the body.

4,614,208

GASEOUS DIFFUSION RESISTANT TUBE

Jerker Skarelius, Virsbo, Sweden, assignor to Wirsbo Bruks Aktiebolag, Sweden

Continuation-in-part of Ser. No. 208,585, Nov. 20, 1980, abandoned. This application Feb. 13, 1984, Ser. No. 579,552
Claims priority, application United Kingdom, Nov. 28, 1979, 7941044
Int. Cl.[4] F16L *11/00*
U.S. Cl. 138—103 **1 Claim**

1. In a heating system using gaseous resistant tubing and subject to temperature variations from about 5° C. to 95° C., the improvement which comprises:

(i) a liquid resistant inner tubular core of a heat resistant, cross-linked polyethylene material;

(ii) a protective outer tubular layer of an impact resistant polymeric material of a graft copolymer of polyethylene with a saline; and

(iii) an intermediate tubular layer of a single, non-metalliferous gaseous resistant material comprising a layer of polyvinyl alcohol, ethylvinyl alcohol or polyacrylonitrile having on each side a priming layer of polyurethane and a layer of polyethylene,

wherein said polyethylene layers of the intermediate layer adhere to the inner tubular core and to the outer tubular layer respectively to form an integral laminate, and said polyethylene material, impact resistant polymeric material and gaseous resistant material have substantially similar coefficients of linear expansion and the intermediate layer is sufficiently elastic, such that when the gaseous resistant tube is cycled from about 5° C. and 95° C. there is substantially no delamination to rupture of the intermediate layer.

4,614,209

WEAVING ROTOR FOR MULTIPLE LONGITUDINAL TRAVERSING SHED WEAVING MACHINES

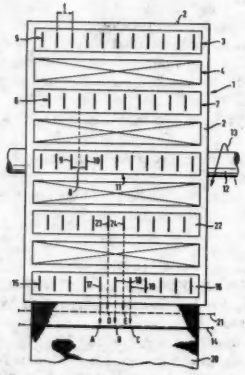
Alois Steiner, Rieden, Switzerland, assignor to Sulzer-Rüti Machinery Works Limited, Rüti, Switzerland

Filed Oct. 3, 1984, Ser. No. 657,351

Claims priority, application European Pat. Off., Oct. 12, 1983, 83110168.8

Int. Cl.⁴ D03D *47/00*

U.S. Cl. 139—11 **1 Claim**



1. A weaving rotor for a multiple longitudinal traversing shed weaving machine having beating-up lamellae combs for the weft threads arranged about the circumference of the weaving rotor, comprising:

a first beating-up comb equipped with beat-up lamellae;

a second beating-up comb equipped with beat-up lamellae;

said first beating-up comb trailing said second beat-up comb in a predetermined direction of rotation of the weaving rotor;

each lamella of said first beating-up comb lying in a respective plane extending substantially centrally between two neighboring lamellae of said second beating-up comb; and

an alternate successive arrangement of said first and second beating-up combs being provided about the circumference of the rotor.

4,614,210

LENO DEVICE FOR WEAVING MACHINES AND WEAVING MACHINES EQUIPPED WITH SUCH A LENO DEVICE

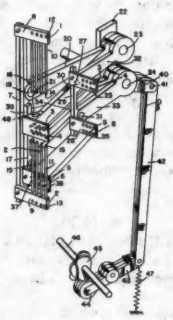
Johnny Debaes, Wevelgem, Belgium, assignor to N. V. Michel Van De Wiele, Kortrijk, Belgium

Filed Feb. 22, 1985, Ser. No. 704,591

Claims priority, application Belgium, Feb. 21, 1984, 898.963

Int. Cl.⁴ D03C *11/00*

U.S. Cl. 139—54 **16 Claims**



1. Leno salvage forming device for double rapier weaving machines, designed to obtain non-fraying edges, characterized by the leno device concerned being fitted with at least one parallelogram device with two vertical members, the front of which is fitted with thread guides and the back of which is fixed to the loom frame in vertical position, while the adjacent members are free to pivot around pivotpoints at the corner points of the parallelogram device, so that the thread guides can move up- and downwards.

4,614,211

DOBBY

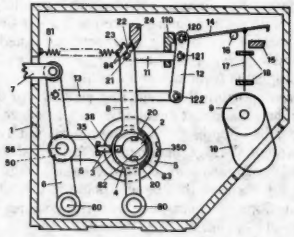
Franz Mettler, Richterswil, Switzerland, assignor to Staeubli Ltd., Horgen-Zaerich, Switzerland

Filed Jun. 15, 1984, Ser. No. 620,869

Claims priority, application Switzerland, Jun. 16, 1983, 3297/83

Int. Cl.⁴ D03C *1/00*

U.S. Cl. 139—76 **8 Claims**



1. A rotation dobby for controlling a heddle frame of a weaving machine, comprising: a shaft supported for rotation about an axis and having two grooves on diametrically opposite sides thereof; an eccentric member rotatably supported on said shaft; means responsive to rotational movement of said eccentric member about said axis for effecting movement of the heddle frame; a coupling part supported on said eccentric member for substantially radial movement between a radially inner position in which it is operatively engaging one of said

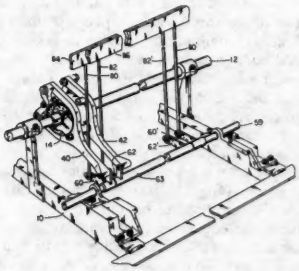
grooves in said shaft and a radially outer position in which it is spaced radially outwardly from said shaft; means for holding said coupling part against rotation relative to said eccentric member about said axis; a control member; means for operatively coupling said control member and said coupling part at all times during operation of said dobby so that all movement of said coupling part in each radial direction is effected solely and directly by said control member; and means for effecting movement of said control member according to a predetermined pattern and so as to cause said control member to control the radial position of said coupling part relative to said axis at all times during operation of said dobby; wherein said means for effecting movement of said control member includes holding means for releasably holding said control member, following each control movement of said control member according to said predetermined pattern, in a respective position to which said control member was moved by such control movement and until the start of the next such control movement.

4,614,212

SHEDDING MECHANISM FOR WEAVING LOOMS

Ronald G. Olenwine, Greensboro, N.C., assignor to Draper Corporation, Greensboro, N.C.

Filed Jun. 4, 1984, Ser. No. 616,619
Int. Cl.[4] D03C *5/00*
U.S. Cl. 139—79 **4 Claims**



1. A positive harness motion mechanism for shedding the harnesses of a weaving loom comprising:

(a) a treadle means connected to each of said harnesses by a connecting member, said treadle means being movable between a first position in which the associated harness is down and a second position in which said associated harness is up;

(b) a shaft rotating in synchronization with the weaving operation of the loom;

(c) cam means and means for securing said cam means to said rotating shaft for rotation therewith;

(d) an actuator means including a main portion having one end thereof pivotally attached to said treadle means; and

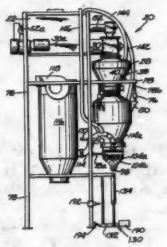
(e) said other end of said main portion being attached to a bifurcated portion in the form of upper and lower segments surrounding said cam means and a tie rod joining the free ends of said upper and lower segment, rollers attached to said main portion, said upper and lower segments and said tie rod adjacent said cam means; the distance between opposite ones of said rollers being substantially the same as the diameter of the corresponding drive surface of said cam means so that said rollers operatively engage with said cam means for positively moving said treadle between said first and second positions in a smooth continuous motion responsive to the rotation of said cam shaft.

4,614,213

BAG FILLER APPARATUS

Robert A. Englin, Waverly, Minn., assignor to St. Peter Creamery, St. Peter, Minn.

Filed Jun. 1, 1984, Ser. No. 616,391
Int. Cl.[4] B65B *1/28*
U.S. Cl. 141—59 **8 Claims**



1. A bag filler apparatus for filing bags with a powdered product, the bags having side walls interconnecting an open top portion and a closed bottom portion, the apparatus comprising:

(a) a support framework;

(b) surge hopper means for holding a first quantity of the powdered product;

(c) first feeder conveyor means for conveying the powdered product to the surge hopper means;

(d) scale hopper means for holding a second quantity of the powdered product;

(e) interconnection means interconnecting the surge hopper means to the scale hopper means for providing a path for the flow of the powdered product from the surge hopper means to the scale hopper means;

(f) first valve means cooperating with said interconnection means for controlling the flow of the powdered product into the scale hopper means from the surge hopper means;

(g) fill chute means interconnected proximate the bottom of the scale hopper means for providing a path for the flow of the powdered product from the scale hopper means;

(h) second valve means cooperating with the fill chute means for controlling the flow of the powdered product from the scale hopper means;

(i) fill chute adaptor means adapted for insertion into the open top portion of a bag, said fill chute adaptor means cooperating with the fill chute means so as to define an air space between the fill chute means and the fill chute adaptor means, the fill chute adaptor means having side walls with a plurality of apertures therein and being at least partially open at a lower end thereof;

(j) vacuum means interconnected to the fill chute adaptor means for creating a partial vacuum condition in the air space between the fill chute means and the fill chute adaptor means whereby the side walls of the bag proximate the open top portion thereof are drawn inwardly against the fill chute adaptor means and particulate suspended inside the bag is removed therefrom;

(k) control means for controlling the operation of the first and second valve means and the vacuum means, said control means including weight sensing means for sensing the weight of the powdered product in the scale hopper means, said control means including means for terminating said partial vacuum condition when the bag is removed from the fill chute adaptor means, whereby room air outside of the bag is not drawn into the vacuum means when the bag is removed; and

(l) second metering conveyor means for conveying the powdered product to the scale hopper means, the second

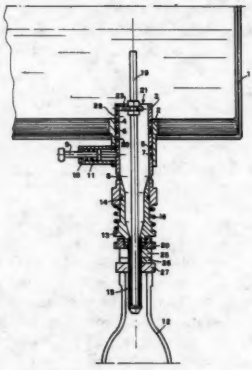
metering conveyor means conveying the powdered product at a lesser rate than the first feeder conveyor means.

4,614,214

TELESCOPIC TAP FOR THE TANKS OF AUTOMATIC LIQUID-FILLING MACHINES

Giuseppe Cappellina, San Bonifacio, Italy, assignor to Ruaro S.p.A., Vicenza, Italy

Filed Mar. 21, 1985, Ser. No. 714,202
Int. Cl.[4] B65B *3/04*
U.S. Cl. 141—288 **7 Claims**



1. A tap for use with a tank of an automatic liquid-filling machine useable to fill containers having openings in the top surfaces thereof, said tap including means for fastening said tap to the bottom of the tank and comprising:

a cylindrical sleeve;

means for fixing said cylindrical sleeve to the tank;

a cylindrical cursor slideably housed in said cylindrical sleeve, said cylindrical cursor having an opening therethrough to facilitate passage of liquid therethrough;

a tube slideably housed in said cylindrical cursor and including a lower pipe portion sized so as to be insertable into the openings of said containers;

a tubular central vent shaft extending through said tube;

a collar mounted to said tube and providing a liquid-tight seal when engaged against a said opening of a said container;

said tube being displaced by engagement of said collar against the top surface of a said container to supply fluid to said container through said tube; and

means for adjusting the position of said cylindrical cursor within said cylindrical sleeve so as to facilitate adjustment for containers of varying height, said means for adjusting including,

a plurality of impressions formed in said cylindrical cursor at positions spaced along a longitudinal axis of said cylindrical cursor, and

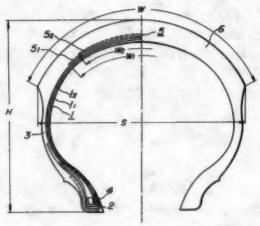
a locking device selectively engaging one of said plurality of impressions to block said cylindrical cursor at a desired position within said cylindrical sleeve.

4,614,215

PNEUMATIC TIRES FOR HIGH-SPEED RUNNING TYPE MOTORCYCLES

Toru Osawa, Urawa, and Yoichi Kitazawa, Higashiyamato, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 454,293, Dec. 29, 1982, abandoned.
This application Jun. 6, 1984, Ser. No. 618,304
Claims priority, application Japan, Mar. 29, 1982, 57-44352[U]
Int. Cl.[4] B60C *9/06, 9/20, 9/30*
U.S. Cl. 152—527 **2 Claims**



1. A pneumatic tire for high-speed running type motorcycles comprising; a toroidal carcass composed of at least two rubberized plies each containing nylon cords therein, the cords of which being crossed with each other at an inclination angle of 30° with respect to the equatorial plane of the tire, a tread portion of rubber extending on the crown region of said carcass along the contour thereof at a substantially equal thickness over the actual maximum width of the tire, a breaker disposed between said toroidal carcass and tread and aligned with said toroidal carcass over the width of the breaker adjacent to said toroidal carcass and composed of plural rubberized plies containing nylon cords crossed with each other, a side portion of rubber covering both sides of said toroidal carcass, said toroidal carcass and said breaker arranged substantially in parallel with each other, said breaker having a cord angle of 10°–20° with respect to the equatorial plane and extending at a width corresponding to 50–80% of the width (W) of said tread portion, the cord plies of said breaker covered with substantially the same coating rubber as the cord plies of the carcass.

4,614,216

METHOD OF AND APPARATUS FOR CASTING METAL USING CARBON DIOXIDE TO FORM GAS SHIELD

Guy Savard, Westmount, and Robert Lee, Montreal, both of Canada, assignors to Canadian Liquid Air Ltd., Quebec, Canada

Filed Feb. 21, 1985, Ser. No. 703,751
Claims priority, application Canada, Feb. 24, 1984, 448241
Int. Cl.[4] B22D *7/00, 11/10, 27/00*
U.S. Cl. 164—67.1 **6 Claims**

1. A method of forming a gas shroud to protect against pick-up of impurities in molten steel having a surface exposed to an atmosphere of air, in a succession of operations, comprising,

for a number of operations, in series, intermittently drawing carbon dioxide vapor in increments from the ullage space of a supply vessel containing a body of liquid carbon dioxide and an overlying mass of vapor,

as each increment of vapor is withdrawn, renewing the vapor by withdrawing and vaporizing a corresponding part of the carbon dioxide in the vessel and recycling it into said ullage space,

passing each increment of carbon dioxide through a heater to superheat it above ambient temperature,

passing the heated increment of carbon dioxide through a regulating control valving mechanism and releasing the

carbon dioxide as a gas through restricted dispensing passages at ambient temperature to form said shroud protecting the steel surface.

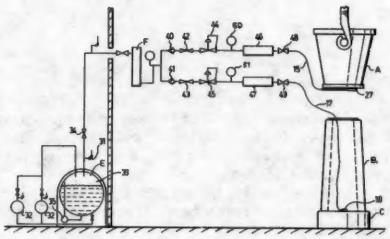
6. An apparatus for carrying out a number of shrouding operations in series, in each operation a stream of steel being passed from an upper vessel to a lower vessel, comprising,

an upper vessel having a bottom opening for forming a gravitating stream of steel,

a pressure vessel for containing a body of liquid carbon dioxide covered by an atmpsphere of carbon dioxide gas,

means defining a gas dispensing passage from the pressure vessel leading to dispensing means surrounding the bottom opening of the upper vessel,

means for controlling the means defining the gas dispensing passage whereby carbon dioxide gas is dispensed from the



pressure vessel in increments required for each shrouding operation,

as carbon dioxide gas is withdrawn from the pressure vessel replacing it with liquid carbon dioxide,

means for controlling the means defining the gas dispensing passage whereby the carbon dioxide gas is supplied in amounts suitable for forming the shroud,

means for superheating the carbon dioxide gas leaving the pressure vessel, flow of carbon dioxide gas to the dispensing means,

means for controlling the temperature to which the carbon dioxide gas is superheated, whereby when it is expanded in dispensing, the temperature is reduced to not less than ambient temperature so that the carbon dioxide is dispensed as a gas.

4,614,217

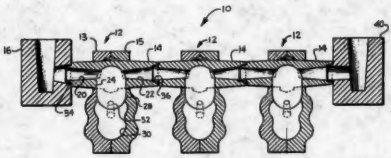
METHOD OF ASSEMBLING A HORIZONTAL SHELL MOLD CASTING SYSTEM AND THE RESULTING SYSTEM

Robert E. Keaton, Westminster, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 14, 1984, Ser. No. 651,221

Int. Cl.[4] B22C *9/02, 9/08, 9/20;* **B22D** *35/04*

U.S. Cl. 164—137 **21 Claims**



1. A method of assembling a horizontal mold system having a horizontal runner feeder comprising the steps of:

sliding complementary halves of a shell mold over the ends of a runner feeder section;

securing the two halves together to form a mold such that the ends of the runner feeder section protrude therefrom;

constructing at least one additional mold by the above steps and

mating the ends of the runner feeder sections of at least two molds together to form the horizontal mold system.

6. A horizontal casting mold system comprising:

a plurality of shell molds in spaced, side-by-side relationship, each mold being formed from complementary halves and defining a mold cavity therein;

a runner feeder associated with each of said molds, said runner feeder having a passage means for carrying molten metal therethrough, said runner feeder held between the halves of said shell mold such that the ends of the runner feeder extend therefrom; and

means formed within said mold and said runner feeder means for passing molten metal from said runner feeder to said mold cavity.

4,614,218

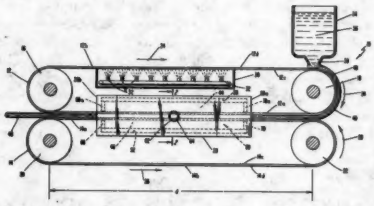
VACUUM BELT HUGGER FOR CASTING OF RIBBON

John R. Bedell, Madison, N.J., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Mar. 4, 1983, Ser. No. 471,995

Int. Cl.[4] B22D *11/06*

U.S. Cl. 164—253 **10 Claims**



1. In an assembly for casting continuous metal ribbon, an apparatus for controllably cooling the ribbon, comprising:

(a) a continuously moving chilled belt traveling at a predetermined speed, said chilled belt including an external surface for receiving molten metal;

(b) means for depositing a molten metal ribbon onto the external surface of the chilled belt;

(c) a continuously counter-rotating hugger belt disposed adjacent the external surface of the chilled belt, said hugger belt including an external control surface traveling a predetermined distance in substantially parallel relationship to said external surface of said chilled belt at said predetermined speed; and

(d) means for creating a partial vacuum between external surfaces of the chilled and hugger belts along at least a portion of the predetermined distance and allowing the ambient pressure along the interior surfaces of the belts to urge the belts together with the ribbon interposed therebetween to control the ribbon and enhance heat transfer relationship between the ribbon and the belts.

4,614,219

FOUNDRY CORE FOR CROSSHEAD PISTON HEAD MEMBER

John D. Anderson, Saginaw, and James W. MacGregor, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1985, Ser. No. 725,063

Int. Cl.[4] B22C *9/10*

U.S. Cl. 164—369 **3 Claims**

1. A foundry sand core for incorporation within a foundry sand mold for defining a metal molding cavity sized and shaped for casting metal to form a blank machinable to produce a crosshead piston head member, said blank having sections roughly corresponding to machined elements of the

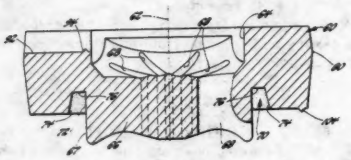
product head member and having a longitudinal axis corresponding to a central axis of the product member, said blank comprising

a head section comprising a generally cylindrical ring belt subsection having an open end extension,

an axially displaced skirt connection section for attachment to a separately formed skirt member, and

a section disposed within ring belt subsection and connecting the head section and the skirt connection section,

said foundry sand core being sized and shaped for molding molten metal to form an interior of the ring belt subsection, said core having a central axis corresponding to the blank axis and comprising a first metal molding surface region for shaping an exterior surface of the ring belt extension and a second metal molding surface region for shaping an end surface of the ring belt extension, said first surface region having a predetermined relationship to the core axis for determining in the blank shaped thereby a predetermined relationship between the exterior ring belt extension surface and the blank axis such that the core-shaped blank exterior surface provides a suitable reference for accurately locating the blank relative to the central axis for machining to form the product head member.



4,614,220

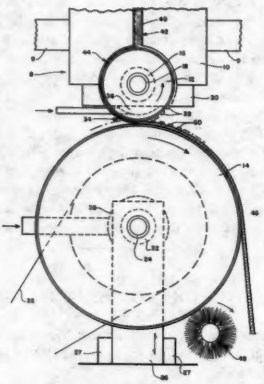
METHOD FOR CONTINUOUSLY CASTING THIN SHEET

Steven J. Savage, Yellow Aprings, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 16, 1984, Ser. No. 672,237

Int. Cl.[4] B22D *11/00*

U.S. Cl. 164—461 **7 Claims**



1. A process for continuously casting a thin layer of a suspension of solid particles in solid metal which comprises feeding said suspension in the molten state into the spreading passage of a spreading and thicknessing die comprising a roller housing and a spreading roller, said housing having a curved portion adapted to fit adjacent to and spaced apart from said roller, said spreading passage being defined by said curved portion and said roller, to provide on said spreading roller a layer of molten material having a thickness in the approximate range of 10 to 40 mils, passing the thus-spread material into and through the nip between said spreading roller and a quenching roller, taking the thus-formed layer off said spreading roller and onto the said quenching roller, maintaining said layer in contact with said quenching roller until dimensionally stable, and removing the resulting stable layer from said quenching roller, wherein said quenching roller is cooled to provide a cooling rate of at least about 100° K./min.

4,614,221

METHOD OF MANUFACTURING THIN METAL WIRE

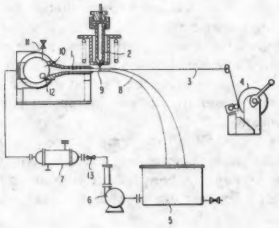
Tsuyoshi Masumoto, No. 8-22, Kamisugi 3-chome, Sendai-shi, Miyagi; Tatsuo Hamashima, Osaka, and Michiaki Hagiwara, Kyoto, all of Japan, assignors to Unitika Ltd. and Tsuyoshi Masumoto, both of, Japan

Filed Sep. 29, 1982, Ser. No. 426,443

Claims priority, application Japan, Sep. 29, 1981, 56-154065; Jan. 8, 1982, 57-1613

Int. Cl.[4] B22D *11/00*

U.S. Cl. 164—462 **12 Claims**



1. A method of producing a thin metal wire

of a structure selected from the group consisting of an amorphous structure, a non-equilibrium crystalline structure, and a microfine crystalline structure comprising the steps of

projecting a molten flow of a metal selected from the group consisting of alloys capable of forming amorphous structures, alloys capable of forming non-equilibrium crystalline structures, and alloys capable of forming microfine crystalline structures into a liquid coolant jet flow in motion at a rate of at least 200 m/min

under conditions satisfying the following formulae (I) and (II) and cooling and solidifying said molten flow of metal:

$$V_W > V_J \quad \text{(I)}$$

$$\theta \geqq 30 \quad \text{(II)}$$

wherein

V_W is the rate of motion (m/min) of the flow of liquid coolant,

V_J is the rate of molten flow (m/min) of the metal projected through a spinning nozzle, and

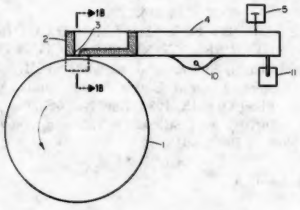
θ is the angle (degree) formed between the flow of liquid coolant and the molten flow of metal projected through the spinning nozzle.

4,614,222

METHOD OF AND APPARATUS FOR CASTING METAL STRIP EMPLOYING FREE GAP MELT DRAG

Robert E. Maringer, Worthington, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed May 16, 1984, Ser. No. 610,721
Int. Cl.[4] B22D *11/06, 11/10, 11/18*
U.S. Cl. 164—463 20 Claims



1. A method for casting of metal strip from a melt comprising:

(A) providing a moving chill surface,

(B) providing a reservoir of molten metal having an orifice for delivering the metal to the chill surface with a positive pressure at the first point of contact of the molten metal with the chill surface,

(C) biasing the orifice and/or the chill surface toward one another such that the gap therebetween is variable, and

(D) delivering molten metal from the orifice to the chill surface so as to form a layer of molten metal on the chill surface which solidifies to a metal strip and which influences the gap between the orifice and the chill surface and which issues at a linear speed substantially equal to the speed of the chill surface.

13. Apparatus for casting of metal strip from a melt comprising:

(A) a moveable chill surface for casting molten metal thereon and for solidification of the molten metal to a solid strip issuing at substantially the same linear speed as the speed of the chill surface,

(B) a source of molten metal, and

(C) metal delivery means including an orifice for delivering molten metal from the source to the chill surface at positive pressure at first contact wherein said chill surface and metal delivery means are biased toward one another in close proximity and fixed for relative movement toward and away from each other such that the gap therebetween may change during use.

4,614,223

METHODS OF ADDING REACTIVE METALS TO STEELS BEING CONTINUOUSLY CAST

William G. Wilson, 820 Harden Dr., Pittsburgh, Pa. 15229

Filed May 17, 1982, Ser. No. 378,880
Int. Cl.[4] B22D *11/10*
U.S. Cl. 164—473 8 Claims

1. A method for adding reactive metals to steel being continuously cast to eliminate the problem of tundish nozzle plugging comprising the steps of:

(a) continuously casting molten steel through a tundish nozzle;

(b) introducing a finely divided reactive metal into the molten steel in finely divided form and at a point and rate in the tundish nozzle such that said reactive metal is substantially unreacted in said nozzle and high melting oxides and oxysulfides of the reactive metal do not come in contact with the bore of the nozzle to cause plugging in the nozzle before passing through the nozzle; and

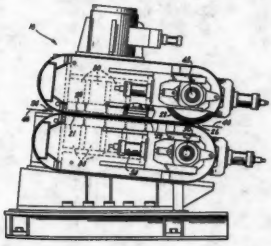
(c) continuously casting the molten steel in a continuous casting system.

4,614,224

ALUMINUM ALLOY CAN STOCK PROCESS OF MANUFACTURE

Paul W. Jeffrey; John Sulzer, both of Kingston, and Peter J. Ashley, Bath, all of Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 327,442, Dec. 4, 1981, abandoned. This application Sep. 10, 1984, Ser. No. 648,873
Int. Cl.[4] B22D *11/06*
U.S. Cl. 164—476 5 Claims



2. A process for making can stock comprising cold-rolled aluminum alloy sheet directly formable, by drawing and ironing, into a one-piece can body, said process comprising

(a) continuously strip-casting an ingot of an aluminum alloy consisting essentially of 0.45–0.8% Mn, 1.1–2.2% Mg, 0.3–1.2% Fe, 0.1–0.50% Si, up to 0.05% Ti, up to 0.15% each of Cu and Cr, other elements up to 0.05% each and up to 0.1% total, balance Al, the combined content of Mn+Mg being more than 1.9% and the combined content of Fe+Mn+Mg being at least about 2.5%; and

(b) subjecting said ingot to rolling, including at least a final cold-rolling operation, to produce said sheet;

wherein the improvement comprises:

(c) performing the step of casting said ingot by continuously supplying the alloy in molten state to a casting space defined between facing extended planar surfaces of a pair of chilled, thermally conductive endless belts continuously moving so as to advance the supplied alloy through the casting space as a solidifying strip ingot in extended contact with said belt surfaces while maintaining a constant heat flux of at least about 40 cal./cm.^{2}/sec. through the belts, for producing an ingot which becomes fully solidified while in contact with the belt surfaces within the casting space and which as cast has a cell size of about 10–15 microns at its surfaces and of about 23–30 microns at the center of its thickness, and for providing in said cold-rolled sheet a constituent particle size of not more than about 2 microns at its surfaces and not more than about 4 microns at the center of its thickness.

4,614,225

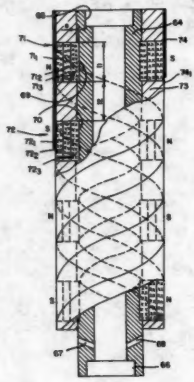
MAGNETIC ROTOR FOR THE CONTINUOUS CASTING OF HOLLOW BODIES

Roland Ernst, Gieres; Marcel Garnier, Saint Martin d'Uriage; Michel Giroutru, Saint-Egreve, and René Moreau, Voiron, all of France, assignors to Vallourec, Paris, France

Filed Dec. 6, 1983, Ser. No. 558,488
Claims priority, application France, Dec. 10, 1982, 82 21271
Int. Cl.[4] B22D *11/10, 27/02*
U.S. Cl. 164—504 15 Claims

1. A magnetic rotor for the continuous casting of hollow bodies, said rotor permitting a moving magnetic field to be produced which traverses the wall of a mandrel inside which the rotor is housed, and wherein said field acts on the liquid metal surrounding the mandrel, creating forces which move this liquid metal, the improvement including a drive means for rotating the rotor about its axis, said rotor comprising a rotat-

able cylinder formed of a magnetic material, a magnetised magnetic material arranged in at least one spiral around said rotatable cylinder, and including a collar formed of a material



containing natural or synethetic fibers, said collar covering the magnetised magnetic material whereby said magnetised magnetic material is made integral with the underlying rotatable cylinder.

4,614,226

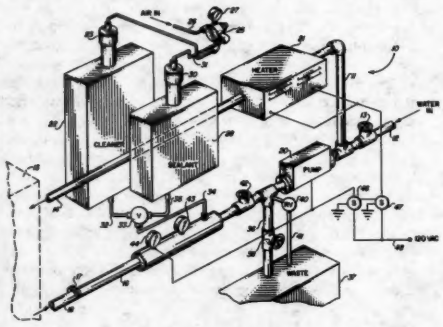
VEHICLE HEATER REPAIR APPARATUS AND METHOD

Thomas W. Ryan, P.O. Box 6412, Orlando, Fla. 32853

Filed Jan. 3, 1984, Ser. No. 567,681

Int. Cl.[4] F28G *9/00*

U.S. Cl. 165—76 **10 Claims**



1. A vehicle heater repair apparatus comprising:

a heater repair apparatus pipe system;

connecting means for removably connecting a vehicle heater input and output lines to said pipe system;

a water inlet connecting a water source to said pipe system for directing water into said pipe system;

a valve in said pipe system for opening and closing said water inlet thereinto;

a pump operatively connected into said pipe system for pumping liquid therethrough;

a sealing solution tank containing a sealing solution connected to said pipe system for injecting a sealing solution thereinto for circulating a sealant solution in said pipe system and through a vehicle heater connected to said pipe system;

heating means connected to said pipe system for heating liquid being circulated by said pump through a vehicle heater connected to said pipe system; and

a cleaning solution tank holding a cleaning solution is attached to said pipe system for injecting a cleaning solution thereinto for circulation through a vehicle heater, whereby a vehicle heater can be cleaned and sealed with a heated liquid without removing the heater from the vehicle.

4,614,227

COOLING BODY FOR THE LIQUID COOLING OF HIGH-POWER SEMICONDUCTOR COMPONENTS

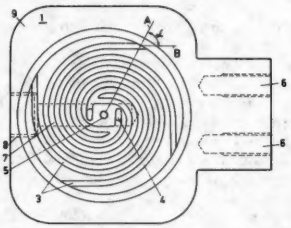
Xaver Vogel, Turgi, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Oct. 15, 1984, Ser. No. 660,974

Claims priority, application Switzerland, Nov. 2, 1983, 5919/83; Nov. 8, 1983, 6013/83

Int. Cl.[4] F28F *3/12*

U.S. Cl. 165—80.4 **33 Claims**



1. A cooling body for the liquid cooling of at least one high-power semiconductor component, said cooling body having:

(a) at least one semi-conductor supporting surface;

(b) a plurality of cooling elements located at the edge of said cooling body;

(c) a collecting channel for cooling liquid formed in said cooling body, said collecting channel having an upstream end and a downstream end, the downstream end of said collecting channel being in fluid communication with said at least one supporting surface; and

(d) at least one cooling slit formed in said semi-conductor supporting surface, said at least one cooling slit having an upstream end and a downstream end, the upstream end of said at least one cooling slit being in fluid communication with the downstream end of said collecting channel and the downstream end of said at least one cooling slit forming a free liquid outflow orifice adjacent said at least one semi-conductor supporting surface, the outflow angle (α) of the downstream end of said at least one cooling slit being in the range from 40° to 90°, said outflow angle (α) being the angle between a radial axis (A) in said at least one semi-conductor supporting surface and the axis of said at least one cooling slit at said free liquid outflow orifice.

4,614,228

TRANSPORT UNIT FOR HOT STOCK

Rainer Lenk, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 15, 1985, Ser. No. 712,351

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409738

Int. Cl.[4] F28D *11/02*

U.S. Cl. 165—89 **4 Claims**

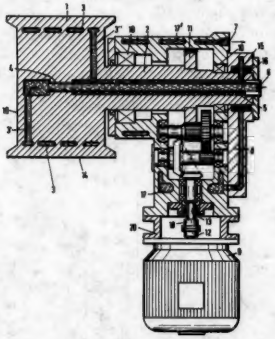
1. A transport unit for elongated hot metallic stock comprising:

a roll or roller having a cooling duct system near its periph-

ery and having radially oriented feed and discharge ducts for coolant;

a journal pin extending from the roll or roller to one axial end thereof and carrying a gear, said journal pin being traversed by a bore extending into the interior of the roll or roller and fluid conductively communicating with the coolant discharge duct;

a gear transmission including a casing, said journal pin being mounted for rotation by means of roller bearings in said casing, said transmission gear including gear means and further including said gear on said journal pin so that said



journal pin constitutes the output shaft of the transmission gear, said transmission gear having an input shaft;

a motor secured to said casing and having a shaft drivingly connected to the input shaft of said transmission gear;

a feed tube for coolant extending through said boar and into said roller for fluid conductive connection with said radial feed duct and being connected to a coolant feed supply;

cooling ducts traversing said casing and being fluid conductively connected to said bore outside said tube; and

means for discharging coolant from the duct system in the casing.

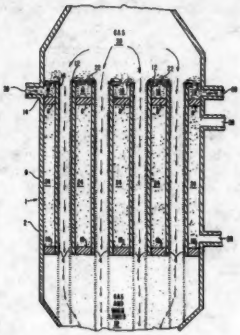
4,614,229

METHOD AND APPARATUS FOR EFFICIENT RECOVERY OF HEAT FROM HOT GASES THAT TEND TO FOUL HEAT EXCHANGER TUBES

Morey E. Oldweiler, Chester, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 20, 1983, Ser. No. 506,036
Int. Cl.[4] F28D *3/04*
U.S. Cl. 165—115 **11 Claims**

1. In recovering heat from a high temperature cracked hydrocarbon gas, a method of injecting a liquid wash into the tubes of a vertically oriented multitube shell-and-tube transfer line heat exchanger (TLE) comprising more than one heat exchange tube and a top tube sheet to prevent deposition of condensable components and coke which comprises introducing the liquid wash into a plenum chamber adjoining and on top of the shell side of the exchanger and defined by the top tube sheet of the exchanger, a horizontal distributor plate thereabove, an outer wall section of the shell of the exchanger therebetween and the wall portion of the tubes between the top tube sheet and the distributor plate; and causing the liquid wash to overflow the plenum chamber through holes in the



distributor plate and flow downwardly within the tubes with the cracked gas.

4,614,230

HEAT EXCHANGER

Kiyoshi Sakuma, Fujieda; Tetsuji Okada, Shizuoka; Yu Seshimo, Fujisawa; Kazuhiro Maruyama; Kisuke Yamazaki, both of Kamakura, and Yuichi Akiyama, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1984, Ser. No. 582,708
Claims priority, application Japan, Jul. 29, 1983, 58-138904
Int. Cl.[4] F28D *1/04*
U.S. Cl. 165—151 **15 Claims**

1. A plate-fin-tube type heat exchanger comprising:

a plurality of parallel plate fins stacked one upon the other;

a plurality of heat exchange fluid transmitting tubes passing through said plate fins and being supported thereby for exchanging heat between said heat transfer fluid and air flowing in an air flow direction between said plate fins;

at least one pair of louvers substantially aligned in said air flow direction and positioned between said tubes in each said plate fin, each louver of said at least one pair of louvers traversing a plane of said plate fin and having a leading edge and a trailing edge extending transverse to said air flow direction, wherein louvers of each said pair are spaced from one another in said airflow direction by a distance such that a cut in said fin plate for a trailing edge of a first louver of said pair of louvers is spaced upstream from a cut in said fin plate for leading edge of a second of said louvers of said pair of louvers by a distance C″, and wherein a central portion of each of said louvers in said airflow direction is angled by a lifting angle with respect to said plane of said plate fin and both leading and trailing ends of each said louver are bent to extend substantially parallel with said plate fin plane but are spaced therefrom by a distance E″ on opposite sides of said plate fin plane; and

a portion of said fin plate positioned between said cut for said trailing edge of said first louver and said cut for said leading edge of said second louver comprising a continu-

ous piece having two halves in said air flow direction, said halves of said portion being angle with respect to said plate fin plane with the same sense as that of the lifting angle of an adjacent said louver, and passing through said plate fin plane.

4,614,231

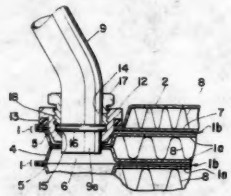
EVAPORATORS

Robert H. Proctor, Cockeysville; Arthur G. Hobbs, Jr., Hampstead, both of Md., and Charles S. Argyle, North York, Canada, assignors to Murray Corporation, Cockeysville, Md.

Continuation of Ser. No. 626,485, Jul. 3, 1984, abandoned, which is a continuation of Ser. No. 406,260, Aug. 9, 1982, abandoned. This application Sep. 11, 1985, Ser. No. 774,867

Int. Cl.[4] F28F *9/02*

U.S. Cl. 165—153 **13 Claims**



11. An evaporator core assembly comprising:

a plurality of stacked cores, each said core comprising a pair of dished, marginally joined sheets,

said sheets having complimentary dished portions adjacent a margin thereof, said dished portions being apertured,

said cores assembled to provide through said apertures of said dished portions a passageway in said core assembly transversely of said sheets of said cores,

an endmost dished sheet of said evaporator core assembly having the dished portion thereof recessed,

a terminal sheet over a substantial portion of the said endmost sheet and having a portion thereof spaced from and generally parallel to the said endmost sheet, said portion of said terminal sheet being in laterally spaced relationship to said dished portion of said endmost dished sheet,

an internally threaded tube joint fitting having a portion extending into said recessed dished portion of said endmost dished sheet,

brazing means securing said fitting to said terminal sheet,

said fitting extending outwardly of said seat to an extent not beyond the said portion of said terminal sheet.

4,614,232

DEVICE FOR DELIVERING FLOWABLE MATERIAL

Rainer Jürgens, Celle-Osterloh, and Johann Biehl, Celle, both of Fed. Rep. of Germany, assignors to Norton Christensen, Inc., Salt Lake City, Utah

Filed Mar. 14, 1985, Ser. No. 711,692

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1984, 3409970

Int. Cl.[4] E21B *43/00, 43/12*

U.S. Cl. 166—105.5 **9 Claims**

1. A device for delivering flowable material from an underground borehole comprising:

a source of pressurized medium;

drive means including a drive working chamber of predetermined working volume, adapted to be rotatably driven by a predetermined working volume of said pressurized medium passed therethrough from an inlet end to an outlet end during each revolution thereof;

pressurized medium conduit means connecting said source of pressurized medium and said drive means;

drive transmission means comprising a rigid connection adjacent to, associated with and connected to said drive means;

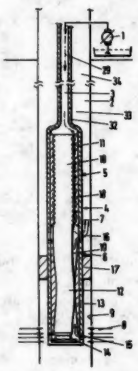
a pump arranged to be adjacent to, rigidly connected to and rotatably driven by said drive transmission means and said drive means;

said pump having a pump inlet communicating with the bore hole and flowable material therein;

a pump outlet spaced from the pump inlet and

a pump working chamber between said pump inlet and pump outlet of greater working volume than the predetermined working volume of the drive working chamber whereby when the pump is driven it delivers per revolution a greater volume of flowable material from the pump inlet to the pump outlet than the predetermined working volume of pressurized medium passed during each revolution of the drive means;

a delivery conduit communicating with and extending from the pump outlet;



sealing means located between the housing and bore hole wall at a point between the pump inlet and the pump outlet;

the drive means and pump are axially aligned adjacent one another and both being of a rotary displacement type each comprising a spiral rotor mounted for eccentric rotational movement relative to a spiral stator attached to a housing;

the spiral rotor of both the pump and the drive means being rigidly connected and aligned to rotate together in the same direction about one axis and having the same eccentric rotational movement relative to each of the spiral stators and a common axis of the spiral stators; and

axial bearing means fixed relative to the housing and adapted to be engaged by an end portion of one of the spiral rotors and take the axial force applied to and by the rotors during the eccentric rotational movement thereof.

4,614,233

MECHANICALLY ACTUATED DOWNHOLE LOCKING SUB

Milton Menard, 111 Iota St., Belle Chase, La. 70037

Filed Oct. 11, 1984, Ser. No. 659,696

Int. Cl.[4] E21B *23/02*

U.S. Cl. 166—206 **5 Claims**

1. A mechanically actuated locking sub for setting and releasing a downhole tool from an oilwell borehole, having landing nipples, without interrupting a production flow therethrough, comprising:

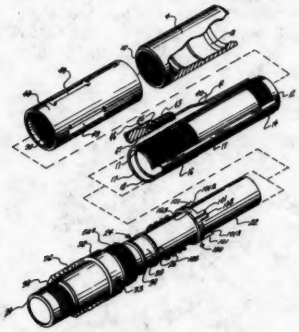
an inner tubular member, having a central conduit and a lower end provided with means for attachment to the downhole tool to be set in or released from the oilwell bore;

an outer sleeve member circumferentially encompassing at

least a part of said inner tubular member, said sleeve having a plurality of apertures therein;

a plurality of locking dog members intermediate said inner tubular member and said outer sleeve member, having an engaging portion extending outwardly through said apertures of said outer sleeve member;

slidable sleeve means intermediate said outer sleeve member and said inner tubular member, movable between a first,



extended and a second, retracted position with respect to said inner tubular member; and

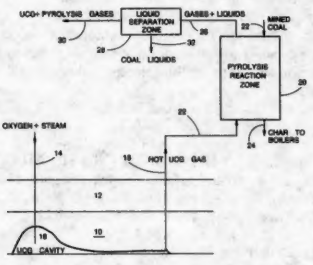
a double acting spring means engaging the locking dogs, adapted to bias said locking dogs towards the inner tubular member when said sleeve means is in the extended position and adapted to bias said locking dogs outwardly from said inner tubular member when said sleeve means is in the retracted position.

4,614,234

METHOD OF RECOVERING COAL VALUES BY COMBINING UNDERGROUND COAL GASIFICATION WITH SURFACE COAL LIQUEFACTION

Rajen Puri, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Mar. 14, 1985, Ser. No. 711,905
Int. Cl.[4] E21B *43/243*
U.S. Cl. 166—261 **4 Claims**



1. A process for obtaining values from coal comprising establishing an underground combustion zone in a coal seam provided with at least one injection well and at least one production well, injecting oxygen and steam through said injection well to maintain a combustion zone in said coal seam thereby producing synthesis gas, removing synthesis gas to the surface from said combustion zone, directly heat exchanging said synthesis gas with mined coal in a pyrolysis zone thereby removing pyrolysis gases and liquids from said mined coal leaving char, burning said char to produce heat, using said heat to generate steam, and utilizing at least a portion of said steam for injection into said coal seam.

4,614,235

USE OF MONO AND POLYALKYLENE GLYCOL ETHERS AS AGENTS FOR THE RELEASE OF DIFFERENTIALLY STUCK DRILL PIPE

Ivian G. Keener, Houston; John C. Newlove, Kingwood; Robert C. Portnoy, Houston; Daniel F. Fehler, Houston, and Kenneth W. Pober, Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Florham Park, N.J.

Filed Apr. 15, 1985, Ser. No. 723,608
Int. Cl.[4] E21B *31/03*
U.S. Cl. 166—301 **7 Claims**

1. An improved method of releasing a stuck drill string in the borehole of an underground formation during drilling operations employing a drilling fluid which comprises contacting the borehole zone contiguous with said stuck drill string with a spotting pill effective to reduce the annular pressure exerted by the drilling fluid against the stuck drill string and to release said stuck drill string, said spotting pill being comprised of an alkylene glycol ether of the class consisting of alkylene glycol ether, poly(alkylene glycol) ether and mixtures thereof.

4,614,236

SELF-BREAKING FOAMED OIL-IN-WATER EMULSION FOR STIMULATION OF WELLS BLOCKED BY PARAFFINIC DEPOSITS

David R. Watkins, Irvine, and Edward J. O'Donnell, Huntington Beach, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed May 29, 1984, Ser. No. 614,976
Int. Cl.[4] B08B *3/08*; E21B *21/14*
U.S. Cl. 166—304 **56 Claims**

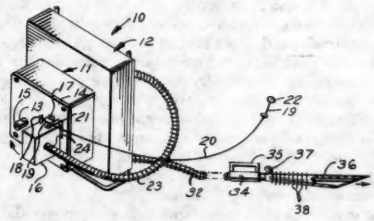
1. A process for removing paraffinic hydrocarbon deposits from subterranean locations penetrated by a wellbore, said process comprising (1) preparing a foamed emulsion remote from said subterranean locations and (2) injecting said foamed emulsion into said wellbore, said emulsion comprising (a) an organic solvent for paraffins, (b) an aqueous liquid component, (c) an inert gas, and (d) a surface active agent.

4,614,237

COMBINATION EXHAUST GAS FIRE EXTINGUISHER AND BLOWER MACHINE

Jesse L. Colodner, 322 Orangeburg Rd., Pearl River, N.Y. 10965, and Edwin D. Ebner, 32 John St., New City, N.Y. 10956

Filed Oct. 15, 1985, Ser. No. 787,466
Int. Cl.[4] A62C *35/00*
U.S. Cl. 169—12 **6 Claims**



1. A combination exhaust gas fire extinguisher and blower machine, comprising an internal combustion engine, a blower coupled to said engine, an engine housing receiving said engine, a blower housing receiving said blower and secured to said engine housing, a pivotal cover secured to said engine housing, for covering and uncovering the exhaust pipe area of

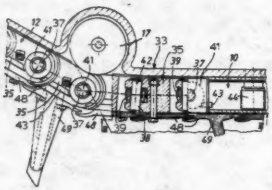
said engine, a flexible control cable secured to said pivotal cover, for the operator to switch from blower operational function, to fire extinguishing function, a first flexible hose secured to said pivotal cover and to said blower, and a second flexible hose secured to an air cooled cone and said blower.

4,614,238

ARRANGEMENT FOR EXCAVATING BULK MATERIAL FROM A TRACK BED

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Dec. 28, 1983, Ser. No. 566,280
Claims priority, application Austria, Jan. 10, 1983, 69/83
Int. Cl.[4] E01B *27/06*; B65G *19/00*
U.S. Cl. 171—16 **9 Claims**



1. An arrangement for excavating bulk material from a track bed and for conveying the excavated bulk material, which comprises

(a) an endless excavating and conveying chain vertically adjustably mounted on a frame of a track working machine, the chain being comprised of

(1) a succession of chain links in the direction of elongation of the chain and

(2) joints connecting adjacent ones of the chain links against relative movement in said direction, the joints having pivoting axles for the adjacent links, the axles extending perpendicularly with respect to each other to permit pivoting of the chain links,

(b) a guide wherein the chain is guided in an endless path, the guide including

(1) two longitudinal guide sections, each longitudinal guide section having an upper and a lower end, the upper ends being adjacent each other,

(2) an excavated bulk material discharge station at the adjacent upper ends of the longitudinal guide sections, and

(3) a transverse guide section connecting the lower longitudinal guide section ends opposite to the discharge station, the longitudinal guide sections each having a major portion obliquely rising from the track bed and an arcuate transition portion at the lower end for connection to the transverse guide section, the transition portions deflecting the chain from the major oblique portions of the longitudinal guide sections into a direction extending substantially parallel to the plane of the track bed, and the pivoting axles of the joints permitting the chain links to pivot between the planes of the major and transition portions of the longitudinal guide sections and the transverse guide section,

(c) chain drive means at the adjacent upper longitudinal guide section ends,

(d) guide means for the chain links for guiding the chain longitudinally along the transition portions as the chain links pivot, and

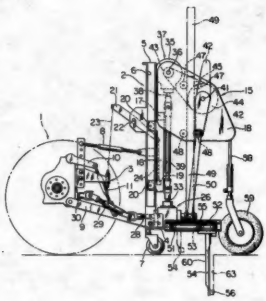
(e) a lower and an upper chain guide roller in each one of the transition portions, the guide rollers being rotatable about horizontal axes extending transversely to the direction of elongation of the longitudinal guide sections and guidingly supporting the chain for deflecting the chain between a respective one of the longitudinal guide sections and the transverse guide section.

4,614,239

DRILLER FOR USE IN RICE FIELD

Isao Minagawa, No. 7-37, Daibo-cho, Yoshida-machi, Nishi-Kanbara-gun, Niigata-ken, and Toshio Minagawa, No. 1253-1, Oaza-Hokkedo, Yoshida-machi, Nishi-Kanbara-gun, Niigata-ken, both of Japan

Filed Dec. 31, 1984, Ser. No. 687,873
Claims priority, application Japan, Apr. 6, 1984, 59-69561
Int. Cl.[4] A01B *45/02*, *35/00*
U.S. Cl. 172—21 **1 Claim**



1. A driller for use on a tractor in a rice field comprising,

a frame connected to the tractor,

a vertically moving rod,

guide rollers mounted on the frame supporting the rod for vertical movement but preventing horizontal movement of the rod,

a vertical moving mechanism connected to the frame and connected to and driven by a drive source on the tractor and connected to and vertically moving the rod,

a horizontally extending guide connected to the lower end of the vertically moving rod,

a support means movably supported from and horizontally movable along said guide rod,

drilling means connected perpendicularly to the support means for drilling holes in the ground as the vertically moving rod is moved upwardly and downardly, said drilling means includes a drill rod having a cylindrical drilling piece adjacent the lower end, and

biasing means connected to the horizontally movable support for biasing the horizontally movable means towards the tractor when the drilling means is disengaged from the ground.

4,614,240

MULTI-BLADE SOIL HANDLING APPARATUS

Maurice E. Miller, Grand Island, Nebr., assignor to Milfarm Manufacturing Corporation, Grand Island, Nebr.

Filed Jan. 7, 1985, Ser. No. 689,482
Int. Cl.[4] A01B *3/62*
U.S. Cl. 172—799.5 **5 Claims**

1. A blade unit, comprising,

a longitudinally extending frame means having rearward and forward ends and transverse sides,

a transversely extending axle means operatively secured to said frame means and having ground engaging wheels at the opposite ends thereof

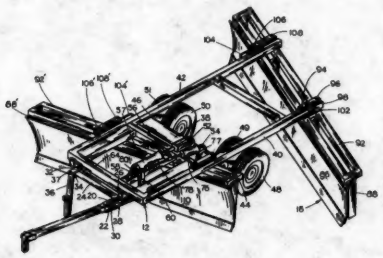
a front blade section operably secured to transverse sides of said frame means forwardly of said axle means, and adapted to move material from one side of said frame to the other,

a rear blade section operably secured to transverse sides of

said frame means rearwardly of said axle means, and adapted to move material from one side of said frame to the other,

a first hydraulic cylinder means operatively connected to and extending between said frame means and said axle means for raising and lowering said wheels with respect to said frame means,

a forwardly extending hitch means operatively secured to



said frame means at the forward end thereof, said hitch means being pivotally secured to said frame means about a horizontal axis,

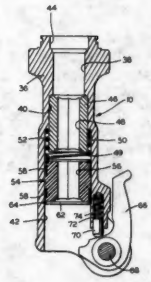
a second hydraulic cylinder means operatively connected to and extending between said axle means and said hitch means to pivot said hitch means with respect to said frame means in response to raising or lowering of said frame and to permit the selective shifting of weight between said blade sections.

4,614,241

IMPACT TOOL ASSEMBLY WITH BIT ISOLATING MEANS

Stephen E. Crover, Boring, Oreg., assignor to The Stanley Works, New Britain, Conn.

Filed Feb. 15, 1984, Ser. No. 580,602
Int. Cl.[4] B23B *45/16*
U.S. Cl. 173—139 **6 Claims**



1. An impact tool comprising: (a) an elongated foot assembly housing having a passageway extending longitudinally therethrough from a tool bit end to a drive end, said housing including a generally cylindrical bushing mounted within said passageway of said housing at a point spaced from said tool bit end and providing an abutment surface within said passageway facing said tool bit end of said housing, said bushing having an axial bore extending therethrough; a tough, elastomeric damping member slidably mounted within said passageway of said housing between said abutment surface and said tool bit end, said damping member having a contact surface on its end facing said tool bit end of said housing and an axial bore extending therethrough, said bore of said damping member and at least a section of said adjacent said abutment surface being axially aligned and being dimensioned and configured to receive the inner end portion of an associated tool bit inserted axially therein from said tool bit end of said housing, said section of said bore in said bushing being dimensioned and configured to permit sliding movement of the associated tool bit end portion therein; means in said housing for limiting the movement of said damping member toward said tool bit end of said housing, said limiting means being spaced from said abutment surface of said bushing a distance sufficient to permit limited travel of said damping member therebetween; and a coiled compression spring in said housing acting upon said damping member to bias said member away from said abutment surface of said bushing and toward said tool bit end of said housing, the end portion of said bushing adjacent said damping member being spaced radially from the laterally adjacent wall portion of said housing to define a circumferential recess therebetween, said spring having one end extending about said bushing within said recess to permit compression of said spring therein during movement of the associated tool bit and thereby said damping member towards said abutment surface; and (b) a drive mechanism operatively engaged with the drive end of said housing and including a hammer and means for reciprocating said hammer substantially along the axis of alignment of said section of said bushing bore and said damping member bore, said hammer being positioned for repetitive direct impact upon the inner end of an associated tool bit inserted from said tool bit end of said housing through said damping member bore and of said bushing bore section; whereby an associated tool bit having a stop element spaced from its inner end can be so mounted in said housing for impact by said hammer, and whereby said spring will store energy and tend to maintain said damping member in position against the stop element of the associated tool bit, so that kinetic energy reflected back from the work surface through the associated tool bit will be transmitted to, and attenuated by, said damping member and will be transmitted to said housing at a reduced level, nearly stationary controlled contact of the associated tool bit with the work surface thereby being maintained.

4,614,242

BORE HOLE ENLARGING ARRANGEMENT AND METHOD

Allen K. Rives, 12211 Carols Way Cir., Houston, Tex. 77070

Filed Sep. 19, 1985, Ser. No. 777,737
Int. Cl.[4] E21B *7/28*
U.S. Cl. 175—269 **13 Claims**

1. A bore hole enlarging arrangement for connection with a rotary pipe string having a fluid flow path comprising:

a body structure including inner and outer telescopic body sections;

expansible and retractable cutter arms pivotally supported on said inner body section;

said outer body section having circumferentially spaced, logitudinal slots for receiving said cutter arms;

longitudinally extending groove means with projection means interfitting therewith for connecting said cutter arms with said outer body section to pivotally support said cutter arms in the longitudinal slots of said outer body section; and

fluid actuated means to move said inner body section up-

wardly relative to said outer body section and thereby effect relative movement between said projection means

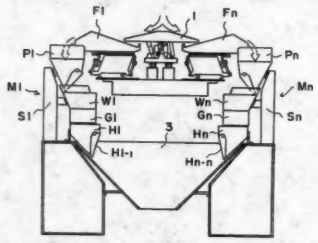
and said groove means to expand said cutter arms outwardly of said outer body section.

4,614,243

COMBINATORIAL WEIGHING MACHINE AND METHOD OF CONTROLLING THE SAME

Tetsuo Ikeda, Ohtsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Oct. 12, 1984, Ser. No. 660,103
Claims priority, application Japan, Oct. 15, 1983, 58-192988
Int. Cl.[4] G01G *19/22, 21/28, 13/16*
U.S. Cl. 177—25 **16 Claims**



1. A combinatorial weighing apparatus comprising:

a plurality of weighing machines for weighing supplied articles and generating weight data items;

a plurality of storage hoppers, disposed adjacent said plurality of weighing machines, for storing articles weighed and supplied respectively from said weighing machines, each of said weighing machines supplying the weighed articles into at least two of said plurality of storage hoppers, each of said storage hoppers being disposed in associated relation to at least two of said weighing machines, so that each said storage hopper can be charged with weighed articles from any of the associated at least two weighing machines; and

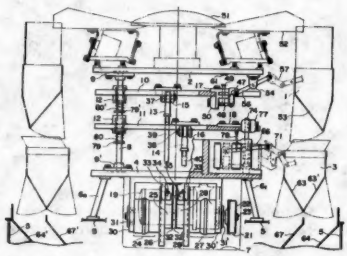
control means for determining an optimum weight combination by performing combinatorial computations based on the weight data items corresponding to the articles respectively charged in said storage hoppers from said weighing machines, for controlling said storage hoppers to discharge the articles forming the optimum weight combination, and for supplying said weighing machines with new articles.

4,614,244

COMBINATION MEASURING APPARATUS

Mitsugu Usagawa, 2-19-8, Ujinakaigan, Minami-ku, Hiroshima-shi, Hiroshima-ken, Japan

Filed Aug. 30, 1985, Ser. No. 770,672
Claims priority, application Japan, Sep. 1, 1984, 59-183339
Int. Cl.[4] G01G *21/28, 13/16*
U.S. Cl. 177—58 **6 Claims**



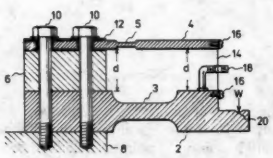
1. A combination measuring apparatus, which is mounted on a machine frame, and which has a plurality of heads, each of which is provided therein with a pool hopper having a discharge plate, and a measuring hopper having discharge plates, disposed in opposition to and on the lower side of said pool hopper and mounted on a weight detecting unit; and a discharge plate opening and closing unit to which the discharge plates of said hoppers are connected via link means, characterized in that said discharge plate opening and closing unit consists of a driving unit provided on said machine frame on which said discharge plate opening and closing unit is mounted, and a vertically movable unit connected to said driving unit and capable of being connected selectively to said link means via a clutch unit.

4,614,245

DEVICE FOR MEASURING FORCE

Masami Yamanaka, Miki, Japan, assignor to Yamato Scale Company, Limited, Japan

Continuation of Ser. No. 537,037, Sep. 29, 1983. This application Apr. 17, 1985, Ser. No. 724,270
Claims priority, application Japan, Oct. 5, 1982, 57-175456; Dec. 20, 1982, 57-193771[U]; Jan. 17, 1983, 58-4989[U]
Int. Cl.[4] G01G *3/14, 3/08*
U.S. Cl. 177—210 FP **5 Claims**



1. A device for measuring a force, comprising first and second cantilever-type elastic members fixed at one of their respective ends and arranged in parallel spaced relationship, a spacer member between the fixed ends of said elastic members, a metal wire stretched between the free ends of said elastic members, means for applying the force to be measured to the

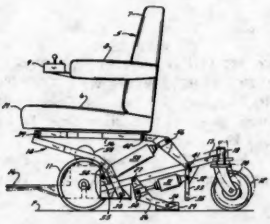
free end of said first elastic member, means for converting vibration of said metal wire into electrical oscillation, means for measuring the frequency of said oscillation, and arithmetic means for calculating said force from said frequency; wherein said spacer member and said metal wire are made of materials having substantially the same linear expansion coefficient and have substantially the same effective dimension in the longitudinal direction of said metal wire, and wherein said first and second elastic members are made of materials having substantially the same temperature coefficients of elastic modulus.

4,614,246

POWERED WHEEL CHAIR

James H. Masse, Rte. 2, and Patrick J. Masse, 920 4th St., both of DePere, Wis. 54115

Filed Jul. 15, 1985, Ser. No. 754,596
Int. Cl.[4] B62D *11/04*
U.S. Cl. 180—6.5 **12 Claims**



4. A wheel chair comprising a chair element having a seat member with front and rear edges and an upwardly projecting back rest, a chassis on which the chair element is supported, wheels on said chassis, and power drive means on the chassis whereby certain of the wheels are driven, said wheel chair being characterized by:

A. said chassis having

(1) a front portion that has a width substantially equal to that of the chair element,

(2) a footrest which projects forwardly from said front portion, and

(3) a rear portion comprising a rigid spar which projects rearwardly from the center of said front portion;

B. said wheels comprising

(1) a pair of front wheels, one at each side of said front portion, confined to rotation on a common axis, and

(2) a rear wheel having a castering connection with the rear end portion of said spar to swivel about a vertical axis which is spaced a substantial distance behind said common axis;

C. said drive means comprising a pair of reversible motors, one for each of said front wheels, each of said motors being mounted on said front portion of the chassis and being connected with its front wheel to drive the same independently of the other front wheel;

D. a brake member having a surface-engaging lower end and having near its upper end a pivotal connection with said spar which is spaced behind said front portion of the chassis and about which the brake member is swingable to carry its lower end between a retracted position in which all portions of the brake member are spaced above a plane tangent to the bottoms of all of the wheels and an extended position in which the lower end of the brake member is spaced below said plane and the brake member elevates the rear wheel and cooperates with the front wheels in providing stable and immobilizing support for the chassis.

8. A wheel chair comprising a chair element having a seat member with front and rear edges, opposite sides and an upwardly projecting back rest, a chassis on which the chair element is supported and which comprises a forwardly projecting footrest, wheels on said chassis, and power drive means on the chassis whereby certain of the wheels are driven, said wheel chair being characterized by:

A. front and rear legs connected between the chassis and the chair element to provide for raising and lowering the chair element and whereby the chair element is carried rearward during raising and forwardly during lowering to have a lowered position in which the chair element is over substantially the whole of the footrest, each of said legs having

(1) an upper pivotal connection to the chair element and

(2) a lower pivotal connection to the frame, all of said pivotal connections extending horizontally in the direction from side to side of the chair element; and

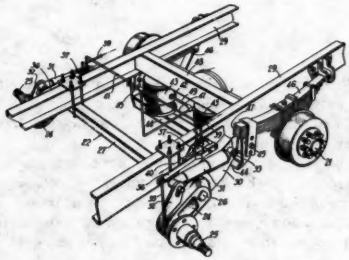
B. powered means connected with said legs for raising and controlledly lowering the chair element.

4,614,247

COMPOSITE MULTI-AXLE SUSPENSION FOR VEHICLES

John W. Sullivan, Sidney, Ohio, assignor to Airstream, Inc., Jackson Center, Ohio

Filed Oct. 26, 1984, Ser. No. 665,068
Int. Cl.[4] B62D *61/10*
U.S. Cl. 180—24.02 **15 Claims**



1. A load dividing suspension system for vehicles comprising a chassis frame, a drive axle assembly supportively connected with the chassis frame, a fluid-pressure responsive spring means on the drive axle assembly and engaging the chassis frame and exerting a variable lifting force thereon, a tag axle assembly attached to the chassis frame and including a vertically swingable support structure for wheels of the tag axle assembly, a distribution valve means on the vehicle for pressurized fluid from an on-board supply of such fluid and having a connection with said supply, an outlet connection and a pressurized fluid line leading to and connected with said fluid-pressure responsive spring means, and an operating linkage for said valve means connected between a movable control element of the valve means and said vertically swingable support structure.

4,614,248

MOTOR-DRIVEN POWER STEERING SYSTEM HAVING A STABLE OUTPUT TORQUE

Toshiaki Kakinami, Kawasaki, and Tomio Yasuda, Kasukabe, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Aug. 8, 1984, Ser. No. 638,668
Claims priority, application Japan, Aug. 8, 1983, 58-144797
Int. Cl.[4] B62D *5/04*; G05D *17/02*
U.S. Cl. 180—79.1 **13 Claims**

1. An electric power steering device for a vehicle, said device comprising:

an electric motor;

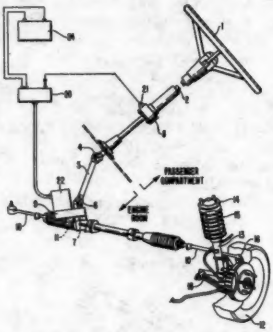
coupling means for coupling a steering shaft to said electric motor;

torque detecting means for detecting the steering torque

manually applied to said steering shaft by a driver and producing a steering torque signal corresponding to the steering torque demanded by the driver;

actuation means for driving said electric motor in response to said steering torque signal;

compensating means for controlling said actuation means to drive said electric motor at a lesser rate with respect to said steering torque when said steering torque signal is below a first predetermined level than the rate at which



said electric motor is driven with respect to said steering torque signal when said steering torque signal is above said first predetermined level, said rate being determined by an integrating circuit; and

noise filtering means for filtering out noise components from said torque signal, wherein said noise filter includes inverting means for inverting said noise components and adding means for adding said inverting noise components to said torque signal to provide a noise-free torque signal.

4,614,249

FRAME STRUCTURE FOR A FOUR-WHEEL DRIVE VEHICLE

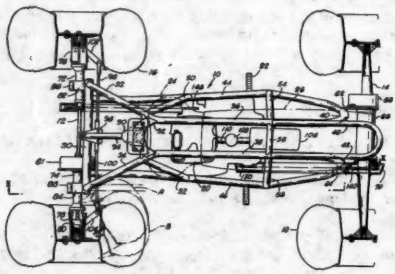
Isao Yamanaka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,235

Claims priority, application Japan, Dec. 29, 1982, 57-231840

Int. Cl.[4] B60K *17/34*

U.S. Cl. 180—312 **4 Claims**



1. A frame for a four-wheel drive vehicle of the type where the rider straddles the vehicle, comprising

a front axle support structure extending transversely of the vehicle;

an upper frame structure including two downtubes extending upwardly, rearwardly and inwardly from said axle support structure and two main body tubes extending rearwardly from said downtubes;

a lower frame strucutre extending rearwardly from said axle support structure, said lower frame structure including two lower frame tubes mutually spaced and extending rearwardly from said axle support structure, said lower frame structure being laterally inwardly of said downtubes at said axle support structure and laterally outwardly of said main body tubes; and

each of said downtubes, main body tubes and lower frame tubes being formed from a continuous tube, said main body tube and said lower frame tube forming a continuous U-bend at the rear of the vehicle.

4,614,250

LOGGING METHOD AND APPARATUS USING A SONDE EQUIPPED WITH MEASURING PADS

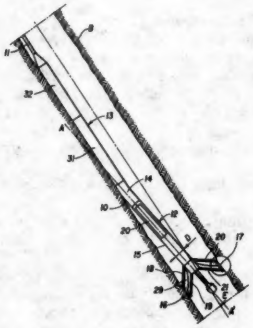
Pascal Panetta, Vanves, and Jacques Tromelin, Longjumeau, both of France, assignors to Schlumberger Technology Corp., New York, N.Y.

Filed Sep. 8, 1982, Ser. No. 415,856

Claims priority, application France, Sep. 9, 1981, 81 17065

Int. Cl.[4] G01V *1/40*

U.S. Cl. 181—102 **8 Claims**



1. Method for logging in a section of a deviated borehole, comprising the following operations:

lowering into the borehole down to a given depth, by means of a cable, an apparatus including an elongated measurement sonde and an elongated cartridge connecting the sonde to the cable, the sonde being equipped with four measuring pads which carry measurement means and which are distributed regularly around the sonde, the pads being placed at the ends of respective arms hinged on the sonde, the opposite pads being kept symmetrical in relation to the axis of the sonde, the dimension of the pads parallel to this axis being at most approximately equal to twice the transverse dimension of the sonde;

applying resiliently the pads against the borehole wall while keeping them parallel to the axis of the sonde, the sonde being centered in relation to the borehole at the height of the pads;

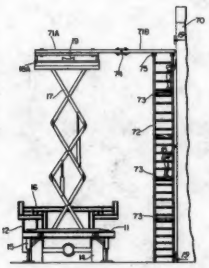
moving the pads along the borehole by pulling on the cable while allowing an angular offset between the axis of the cartridge and that of the sonde, whereby the cartridge can rest on the borehole wall.

4,614,251

LOAD RAISING VEHICLE AND METHOD

Hugh M. Hawkins, Annandale, Va., assignor to John J. Kirlin, Rockville and Wayne T. Day, Wheaton, both of, Md.

Division of Ser. No. 260,761, May 5, 1981, Pat. No. 4,491,449.
This application Aug. 29, 1984, Ser. No. 645,361
Int. Cl.[4] E04G 1/22
U.S. Cl. 182—63 4 Claims



1. A load raising vehicle comprising, in combination:

a ground engaging and chassis structure, a base supported by the ground engaging and chassis structure to travel along the ground therewith,

a support surface means stationarily mounted on the base and extending horizontally, transversely across the vehicle to support an elongated object extending longitudinally of the the vehicle,

and a lifting means mounted on the base and being aligned, longitudinally with a portion of said support surface means, said lifting means being movable between a lowered position, at which the top of the lifting means is below the height of said support surface means and a raised position at which the top of the lifting means is substantially higher than said support surface means, power operated means for effecting vertical movement of the lifting means,

wherein the lifting means can engage an elongated object supported by the support surface means from below and raise the object to a substantial height above the support surface means,

said elongated object being a scaffold support means including a first support portion secured to the lifting means and positioned substantially over the vehicle and a second support portion connected to the first support portion extending transversely outwardly sideways from the vehicle and including a scaffold structure connected to the second support portion of the scaffold support means and extending therefrom downwardly substantially to the ground level engaged by the vehicle, whereby the scaffold is positioned adjacent a vertical surface of a structure while substantially free from load bearing support by said structure.

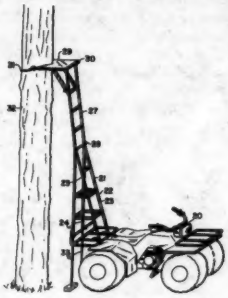
4,614,252

PORTABLE OBSERVATION STRUCTURE

David E. Tarner, Rte. 1, Box 114, Nahunta, Ga. 31553

Filed Nov. 8, 1985, Ser. No. 795,887
Int. Cl.[4] A01M 31/02; E06C 5/04
U.S. Cl. 182—116 15 Claims

1. A portable observation structure removably attachable to a wheeled vehicle comprising two pairs of upright legs in a rectangular pyramidal arrangement with the bottom of each of said legs releaseably attachable to said vehicle, a first pair of legs attachable adjacent the rear of said vehicle and a second pair of legs attachable spacedly rearward of said first pair, lateral rungs connecting said first pair of legs, telescopic extensions of said second pair of legs adapted to selectively be extended to reach the ground on which said vehicle rests, said



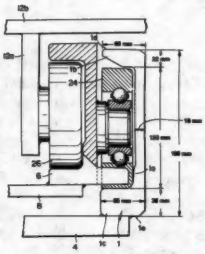
pyramidal arrangement having a seat member attached to the upper end thereof.

4,614,253

MAST CHANNEL MEMBER CONFIGURATION OF FORKLIFT TRUCK

Osamu Furukawa, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed May 21, 1984, Ser. No. 612,343
Claims priority, application Japan, May 23, 1983, 58-91287
Int. Cl.[4] B66F 9/08
U.S. Cl. 187—9 E 4 Claims



1. A mast channel member of a forklift truck, comprising:

a member consisting of a substantially planar web; and

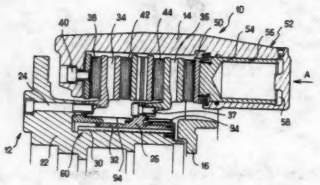
first and second flanges integral with said web, said first flange being located forward said second flange relative to the forklift truck, said first and second flanges respectively having first and second faces which are respectively located fore-most and rear-most in said mask channel member relative to the forklift truck; and

wherein a thickness of said second flange is larger than a thickness of said first flange such that a ratio (e_1/e_2) of a first distance (e_1) between the first face and a center of gravity of the figure in cross-section, to a second distance (e_2) between the second face and the center of gravity is within a range of $1.1 \leqq e_1/e_2 \leqq 1.5$.

4,614,254
BRAKING SYSTEM INCORPORATING AT LEAST ONE SLIDING BRAKE DISC

Jean C. Mery, Pavillons Sous Bois; Alain Thioux, Chennevieres, and Guy Meynier, Aulnay Sous Bois, all of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Nov. 27, 1984, Ser. No. 675,161
Claims priority, application France, Nov. 30, 1983, 83 19140; May 30, 1984, 84 08544
Int. Cl.[4] F16D *55/36*
U.S. Cl. 188—71.5 **11 Claims**



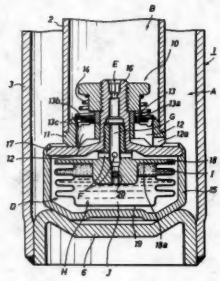
1. A multi-disc brake comprising a first rotary disc solid with a wheel hub and a second rotary disc mounted on the hub for sliding movement parallel to an axis of the hub, the axis of the hub and axes of the discs coinciding with one another, and an assembly of friction blocks incorporating friction linkings capable of engaging faces of the discs by means of an hydraulic actuating device, the linings extending only over a limited angular sector of the periphery of the discs, the second rotary disc carried by an internally splined sleeve which slides on an externally splined part of the wheel hub, splines of the sleeve and hub forming key means and engaged with one another to drive rotationally the second rotary disc with the wheel hub, characterized in that the brake includes a mechanism for forced greasing of the splines of said key means, the mechanism having two sealed chambers provided with a lubricating agent and connected by means of spacings between said splines, the sleeve having annular axial extensions at axial ends thereof, the axial extensions each slidably and sealingly engaging an axially stationary wall of the respective chamber in order to form portions of the sealed chambers, the sealed chambers being disposed at the wheel hub.

4,614,255
HYDRAULIC SHOCK ABSORBER FOR VEHICLES

Isamu Morita; Yasuji Nozawa, and Hideki Maru, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 213,845, Dec. 8, 1980, abandoned. This application Jun. 23, 1983, Ser. No. 507,159
Claims priority, application Japan, Dec. 7, 1979, 54-158762
Int. Cl.[4] F16F *9/08*
U.S. Cl. 188—315 **13 Claims**

1. A hydraulic shock absorber for vehicles, comprising:
inner and outer cylinders filled with a working oil;
a piston slidably fitted in said inner cylinder;
a piston rod supporting said piston;
a bottom valve disposed at the bottoms of said inner and outer cylinders;
a first passage provided in said piston so as to pass axially therethrough;
a first valve means operatively cooperating with said first passage;
a second passage provided in said bottom valve for providing communication between said inner and outer cylinders;
a second valve means operatively cooperating with said second passage;
a casing defining an oil chamber therein, said oil chamber being arranged to be in communication with the interior of said inner cylinder;
a gas chamber hermetically defined by an elastic metal membrane, said gas chamber having gases confined therein;
said gas chamber being disposed in said oil chamber;
said elastic metal membrane defining said gas chamber being elastically deformable while compressing said gases in said gas chamber at a rate corresponding to a rising oil pressure in said oil chamber during only an initial stage of at least a compression stroke of said piston;
the pressure of said gases confined in said gas chamber being



set substantially at atmospheric pressure, such that it is substantially the same as said working oil pressure when said piston stands still; and
the volume V (cm^3) of said gases in said gas chamber being such that:

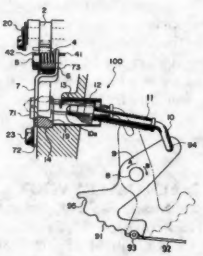
$$V \leqq 0.75\pi d^2 \text{ or } 0.75\pi(D^2-d^2)$$

wherein d=the diameter of said piston rod (in centimeters) and D=the inside diameter of said inner cylinder (in centimeters).

4,614,256
PARKING BRAKE STRUCTURE FOR AUTOMATIC TRANSMISSION MECHANISM

Yoshinari Kuwayama; Masakatsu Miura, both of Anjo, and Kunio Morisawa, Toyota, all of Japan, assignors to Aisin-Warner, K.K., Anjo and Toyota Jidosha K.K., Toyota, both of, Japan

Filed May 27, 1983, Ser. No. 498,911
Claims priority, application Japan, May 28, 1982, 57-091722
Int. Cl.[4] B60K *41/26*; B60T *1/00*
U.S. Cl. 192—4 A **3 Claims**



1. Parking brake structure for automatic transmission mechanism comprising:
(a) a parking gear having teeth at the outer periphery and rotatably mounted around a shaft;
(b) a pawl element pivotably mounted between a locked position in which the pawl element engages with the

parking gear and a released position in which the pawl element disengages from the parking gear;

(c) a bias member urging the pawl element toward the released position with one end thereof rested on a stationary member;

(d) a rod member movably mounted in the direction generally perpendicular to the oscillating plan of the pawl element;

(e) a cam member substantially secured to one end of the rod member to pivot the pawl element toward the locked position against the force of the bias member and away from the locked position in company with the reciprocating movement of the rod member, and the cam member carrying a conical cam surface of first conical angle and that of second conical angle greater than the first conical angle, each tapered toward the one end of the pawl element; and

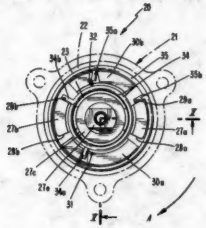
(f) a sleeve guide member into which the cam member slides, and having a length equivalent to that required for the cam member to move so as to pivot the pawl element between the locked position and the released position.

4,614,257

SPRING COUPLER APPARATUS

Kuniyoshi Harada, Takahama, and Yukifumi Yamada, Nagoya, both of Japan, assignors to Aisin Seiki Company, Ltd., Japan

Filed Dec. 20, 1983, Ser. No. 563,378
Claims priority, application Japan, Dec. 26, 1982, 57-232689
Int. Cl.[4] G05G *5/16*
U.S. Cl. 192—8 C **8 Claims**



1. A spring coupler apparatus comprising:

a case having a circular housing extending a predetermined length measured along the axis of said housing, a circular support frame positioned radially inward from said housing and extending along a substantial portion of said predetermined length of said housing, said housing and said support frame concentrically aligned along a plane extending perpendicular to the axis of said housing, said case further including a sidewall connecting said housing and said support frame along said plane, wherein the area occupied by said case is substantially defined by the diameter of said housing and said predetermined length;

drive means supported within said case along the length of said support frame, said drive means having a recess area;

driven means disposed within said case and having a projection extending into said recess area for rotational alignment with said drive means;

a first coil spring of relatively large diameter mounted between said housing and said support frame and having frictional engagement with said housing in the free state of the first spring, one end of said first spring being securely fixed to said driven means and the other end of said first spring being engageable with said drive means for contracting said first spring and freeing its frictional engagement with said housing in a first direction of rotation of said drive means; and

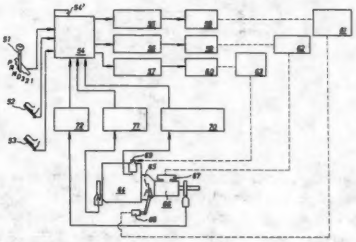
a second coil spring of relatively small diameter mounted between said housing and said support frame and having frictional engagement with said support frame in the free state of said second spring, one end of the said second spring being securely fixed to said driven means and the other end of said second spring being engageable with said drive means for expanding said second spring and freeing its frictional engagement with said support frame in a second direction of rotation of said drive means.

4,614,258

AUTOMATIC SPEED CHANGE CONTROL METHODS FOR SELF-MOVABLE VEHICLE

Takao Fukunaga, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Jul. 10, 1984, Ser. No. 629,427
Claims priority, application Japan, Jul. 27, 1983, 58-138085
Int. Cl.[4] B60K *41/28*
U.S. Cl. 192—0.052 **7 Claims**



1. A method of automatic speed change control for a self movable vehicle wherein, during running of a self movable vehicle of a type that power of an engine is transmitted to driving wheels through a clutch and a finite stage gear speed changer:

determining actual speed of the vehicle;

determining an acceleration pedal stepping value;

monitoring a speed change ratio from said actual speed and acceleration pedal stepping value;

when said acceleration pedal stepping value is detected to be zero during running of the vehicle in a high speed gear stage above a pre-selected vehicle range and when the actual vehicle speed is greater than a prescribed preset vehicle speed at which a gear mode is to be changed to a lower-speed gear stage;

disengaging the clutch when speed-change ratio is equal to a preset speed-change ratio;

meshing gears of the transmission following a prescribed time delay from the point in time in which the clutch was disengaged;

re-engaging the clutch following a further prescribed time delay; and

forceably changing the transmission gear mode to a lower-speed stage to enable an engine brake to function more effectively.

4,614,259

CLUTCH DRUM FOR AUTOMATIC TRANSMISSION

Shinsuke Eguchi, Zama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 19, 1983, Ser. No. 524,717
Claims priority, application Japan, Aug. 20, 1982, 57-144557
Int. Cl.[4] F16D *11/04*
U.S. Cl. 192—70.11 **8 Claims**

1. An automatic transmission comprising:

a stationary element;

a torque shaft having a splined portion;

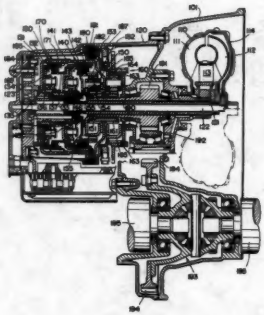
a clutch including a plurality of first clutch plates, a plurality of second clutch plates interleaved with said plurality of

first clutch plates, a fluid operated piston, and a clutch drum, said clutch drum comprising:

an outer tubular portion engaged with said plurality of first clutch plates;

an inner tubular portion;

a disc portion connected to said outer and inner tubular portions and radially extending therebetween to define a first space slidably receiving therein said fluid operated piston; and



a mounting portion connected to said inner tubular portion and extending inwardly toward said inner tubular portion, said mounting portion defining a splined opening for receiving said torque transmitting shaft therein, said mounting portion being splined to said splined portion of said torque transmitting shaft for rotation therewith said mounting portion co-operating with said inner tubular portion to define a second space therebetween for receiving said stationary element.

4,614,260

CENTRIFUGAL CLUTCH

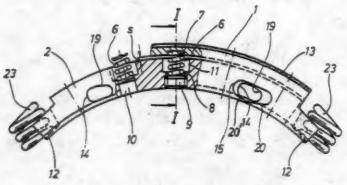
Rainer Klink, Kernen, and Johann German, Weinstadt, both of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft, mbH, Fed. Rep. of Germany

Filed Oct. 25, 1984, Ser. No. 664,550

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1983, 3338776

Int. Cl.[4] F16D *43/00*

U.S. Cl. 192—105 CE **20 Claims**



1. Centrifugal clutch apparatus comprising a fly element arrangement for drivingly connecting rotatably driven drive means and frictional surface means of a driver means which is engageable with friction surface means of fly element means in response to centrifugal forces induced by rotation of the driving means, said fly element arrangement including:

an inner partial fly weight,

an outer partial fly weight separate from the inner fly weight having a fly weight friction surface engageable with the friction surface means of a driven means,

drive member means for drivingly interconnecting at least one of the inner and outer partial fly weights to a rotational driving means, and

fly weight interconnecting means for operably interconnecting the inner and outer partial fly weights together so that centrifugal forces acting on both the inner and outer partial fly weights are transmitted to the fly weight friction surface,

wherein said inner and outer fly weights each include separate guide path control means for controlling their circumferential and radial movement with respect to said drive member means whereby rotational speed dependent torque transfers between said drive member means and said frictional surface means of the driven means are controlled in a predetermined manner.

4,614,261

DAMPER DISC ASSEMBLY

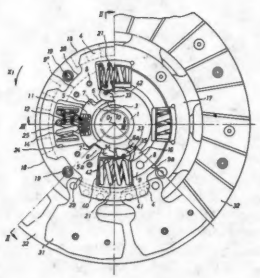
Hiroshi Takeuchi, Higashiosaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Feb. 15, 1985, Ser. No. 702,207

Claims priority, application Japan, Feb. 17, 1984, 59-29255

Int. Cl.[4] F16D *3/14*

U.S. Cl. 192—106.2 **5 Claims**

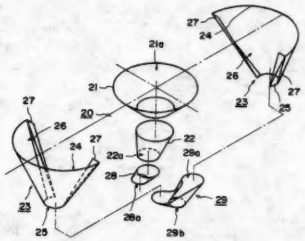


1. A damper disc assembly wherein an outward flange of a hub is divided into an inner side flange and an outer side flange, an external tooth of the inner side flange meshes with an internal tooth of the outer side flange with circumferential clearances provided therebetween and the inner side flange is elastically connected to the outer side flange through a weak torsion spring a center line of which extends in a circumferential direction, side plates are disposed on both sides of the flanges and at the same time the outer side flange is elastically connected to the side plates through a strong second torsion spring extending in the circumferential direction; characterized by that a cam freely rotatable about an axis parallel to a disc center line is provided between said internal tooth and said external tooth, a longitudinal portion of the cam engages between said external tooth and said internal tooth when a torsion is produced between the inner side flange and the outer side flange, and a spring member is provided, which elastically urges the cam to such an extent that the cam longitudinal portion is kept engaged when an angular velocity at which said torsion is released is high and the portion is disengaged when the angular velocity is low.

4,614,262
SEPARATING CHUTE SYSTEM

Satoshi Konishi, Kusatsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Jul. 20, 1983, Ser. No. 515,518
Claims priority, application Japan, Jul. 24, 1982, 57-112266[U]
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.[4] B65G *11/00*; G01G *19/32*
U.S. Cl. 193—23 **6 Claims**



1. A separating chute system having two discharge passage routes, comprising:

(a) an inner chute including an upper chute section having the shape of an inverted frustrum of a cone defining a first solid angle, and a lower chute section removably attached to said upper chute section and having the shape of an inverted frustrum of a cone defining a second solid angle, the second solid angle being smaller than the first solid angle;

(b) a pair of outer chutes shaped to cover the outer periphery of said inner chute, and arranged about the outer periphery of said inner chute, the outer chutes being removably attached to each other;

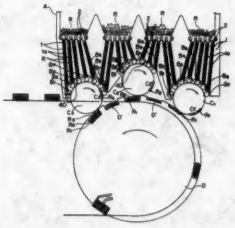
(c) a first discharge chute placed below said lower chute of said inner chute and inclined radially outwardly of said inner chute; and

(d) a second discharge chute mounted below said pair of outer chutes so that the weighed articles passing through said outer chutes are collected together into one passage and discharged to the outside.

4,614,263
CIGARETTE ARRANGING APPARATUS

Tomizou Nagata, and Kazutaka Kobayashi, both of Tokyo, Japan, assignors to Japan Tobacco, Inc., Japan

Filed Sep. 6, 1984, Ser. No. 647,904
Claims priority, application Japan, Sep. 13, 1983, 58-167582
Int. Cl.[4] B65G *47/26*
U.S. Cl. 198—419 **16 Claims**



1. A cigarette arranging apparatus for packing a plurality of loose cigarettes into discrete groups containing a predetermined quantity of cigarettes comprising:

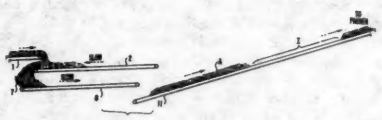
an arranging drum having a plurality of arcuate grooves formed in the periphery thereof, said grooves extending in the axial direction of the drum in intimate contact with each other in the circumferential direction; and

a plurality of cigarette receiving rollers mounted in close proximity to the upper outer periphery of said arranging drum, said cigarette receiving rollers corresponding in number to that of said arcuate grooves, said cigarette receiving rollers being arranged each to receive one piece of cigarette out of said plurality of cigarettes, said arranging drum and said cigarette receiving rollers being rotated in the reverse directions, said plurality of cigarette receiving rollers including a leading roller and successively trailing rollers being respectively arranged to supply cigarettes into said plurality of arcuate supporting grooves, respectively, from the leading groove and thereafter successively into the trailing grooves without changing the motion speed thereof, thereby forming a group of cigarette pieces in intimate contact with each other.

4,614,264
METHOD AND APPARATUS FOR CONVEYING WEIGHED AMOUNTS OF MATERIAL

Francis B. Fishburne, Arden, N.C.

Continuation-in-part of Ser. No. 621,764, Jun. 18, 1984, abandoned. This application Oct. 22, 1985, Ser. No. 790,249
Int. Cl.[4] B65G *11/08, 43/10*
U.S. Cl. 198—505 **5 Claims**



1. The method for supplying loose material in individual increments of equal weight when the loose material is delivered continuously from a source, comprising operating a first conveyor to carry the material from the source and deposit the material continuously at a substantially constant rate onto a reversible endless second conveyor; operating the second conveyor in one direction to feed material received from the first conveyor onto the input end of an endless variable speed third conveyor constructed and arranged to weigh the material as the material is deposited thereon; operating the third conveyor at a first relatively slow rate until a predetermined weight of material has been deposited thereon by the second conveyor and, upon occurrence of said predetermined weight,

operating the third conveyor at a second relatively fast rate, and

reversing the second conveyor so that the second conveyor ceases to supply tobacco to the third conveyor and operates as a holding conveyor still receiving material continuously from the first conveyor;

continuing to operate the third conveyor at said second speed until the entire weighed quantity of material has been discharged at a point of delivery; and

upon completion of discharge of the weighed quantity of material from the third conveyor

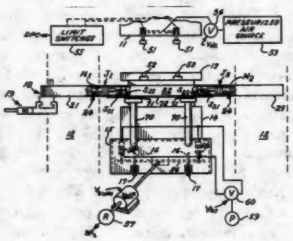
again reversing the second conveyor to feed its held material as well as incoming material from the first conveyor onto the now empty third conveyor, and returning the third conveyor to said first relatively slow rate.

4,614,265

APPARATUS FOR AUTOMATICALLY SPLITTING TRANSFER FEED RAILS IN A TRANSFER FEED PRESS

Lucian Glasberg, Skokie, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Jul. 22, 1985, Ser. No. 757,809
Int. Cl.[4] B65G 25/00
U.S. Cl. 198—774 21 Claims



21. In a transfer feed press having a main motor means and one or two longitudinally movable multi-segment transfer feed rails with finger units positioned along the length thereof for moving workpieces through the press, a system for automatically splitting and re-joining at least one of said transfer feed rails in response to manually input signals from the press operator such that the central rail segment and its finger units and the terminal rail segment finger units are removed transversely from said press while the terminal rail segments remain in the press, the improvement comprising:

main transfer drive means attached to one end of said transfer feed rails for driving said transfer feed rails longitudinally, said main transfer drive means having rail position sensor means for generating signals regarding the longitudinal position of said transfer feed rails;

first and second controllable motor means for driving said main transfer drive means, each of said controllable motor means being independent from said main motor means;

vertically and transversely movable support means for supporting at least one central rail segment, said support means having controllable positioning means for selectively raising and lowering said support means and for transversely moving said support means;

at least two controllable motor-actuated connection means for connecting and disconnecting said transfer feed rail segments;

carriage means in longitudinally slidable engagement with said central rail segment;

first controllable driving means for longitudinally driving said carriage means;

armature means pivotally mounted on said carriage means, said armature means comprising a bent arm having first and second arm segments and an elbow therebetween by which said bent arm is pivotally connected to said carriage means, said first arm segment being adapted at its end opposite said elbow for carrying said terminal rail segment finger units and said second arm segment forming substantially a right angle with said first arm segment;

second controllable driving means connected to said second arm segment at its end opposite said elbow for causing said armature means to pivot, thereby vertically moving said terminal rail segment finger units; and

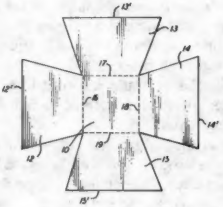
microprocessor means for controlling the automatic splitting and re-joining of the transfer feed rails and the vertical and longitudinal movement of said terminal rail segment finger units having a program for generating a predetermined sequence of signals in response to predetermined manually-input signals and signals generated by predetermined press components, said microprocessor means actuating said first and second controllable motor means to drive said main transfer drive means, and thereby said transfer feed rails, so that said transfer feed rails are moved through a predetermined sequence of longitudinal positions, actuating said controllable positioning means so that in response to predetermined signals from said rail position sensor means representing longitudinal positions of said transfer feed rails said support means are moved vertically into and out of supporting contact with said central rail segments, actuating each of said motor-actuated connection means in a predetermined sequence so that said transfer feed rail segments are connected and disconnected in response to predetermined signals from said rail position sensor means representing longitudinal positions of said transfer feed rails, actuating said second controllable driving means for pivoting said armature means and thereby vertically moving said terminal rail segment finger units, and actuating said first controllable driving means for longitudinally moving said carriage means.

4,614,266

MUSICAL GIFT PACKAGE

Richard W. Moorhead, 4474 Broad Rd., Syracuse, N.Y. 13215

Filed Jun. 12, 1985, Ser. No. 743,825
Int. Cl.[4] B65D 77/00
U.S. Cl. 206—216 5 Claims



1. A musical gift package comprising:

(a) a box portion having a bottom wall and a plurality of side walls integrally attached to said bottom wall and movable with respect thereto between a first position, wherein said bottom and side walls are essentially coplanar, and a second position wherein said side walls extend generally upwardly from said bottom wall and the side edges of each side wall meet the side edges of the adjacent side walls;

(b) a cover portion comprising a top wall with side portions extending downwardly about the periphery thereof;

(c) said cover portion being removably placed upon said box portion when said side walls are in said second position, with said cover side portions closely surrounding the upper marginal portions of said box side walls to prevent movement thereof to said first position;

(d) means for moving said box side walls from said second to said first position in response to removal of said cover portion; and

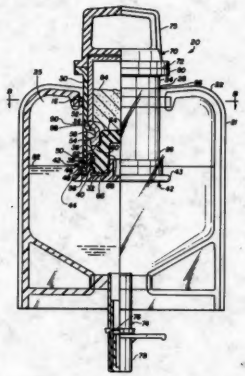
(e) a miniature, sound-producing, electronic circuit and power source affixed to said box portion for actuation to produce a series of tones representing a musical melody in response to movement of said side walls from said second to said first position.

4,614,267

DUAL COMPARTMENTED CONTAINER

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 470,105, Feb. 28, 1983, abandoned. This application Dec. 23, 1983, Ser. No. 565,126
Int. Cl.[4] A61M 5/14; B65D 25/08
U.S. Cl. 206—221 86 Claims



1. An additive container for storing a sterile fluid and for mixing such stored fluid with the fluid contents of a flexible container having wall means which is deformable inwardly for manipulation of a stopper removal means therein and which has a port with additive container engagement means, and stopper engagement means in the flexible container for removing a stopper from an additive container engaged by said additive container engagement means, said additive container comprising:

a container having a removable stopper;

said container including complementary engagement means for interconnection with said additive container engagement means; and

said stopper including means for connection with such a stopper engagement means in such a flexible container when said complementary engagement means is interconnected with the additive container engagement means of the flexible container;

whereby when said complementary engagement means is interconnected to said additive container engagement means of said flexible container and connection means of said stopper interconnects with said stopper engagement means of said flexible container and exterior manipulation from outside said flexible container of said stopper engagement means will effect removal of said stopper from said container allowing the fluid contents of the containers to intermix in said flexible container.

6. A fluid container for holding a fluid and receiving a medicament thereinto from an independent medicament container having an egress opening closed by a sealing barrier,

said fluid container constructed to define a sealed compartment for storing a sterile liquid, said fluid container having flexible walls,

a portion of said fluid container defining an inlet passageway to said compartment through said walls and including means for affixing such an independent medicament container to said fluid container with the opening of such medicament container in communication with said passageway and with said sealing barrier of said medicament container exposed to said passageway, and

means within said compartment and manipulatable through said flexible walls for removing said sealing barrier from a medicament container so affixed by said affixing means to open such an affixed medicament container,

said flexible walls being of a material and construction such that said walls are deformable inwardly for manipulation of said removing means through said walls for so removing said sealing barrier,

whereby a medicament will flow from such an affixed medicament container into said first compartment through said passageway.

7. A device for separately storing and subsequently mixing the fluid contents of two containers wherein a removable barrier separates the containers, said device comprising:

a first flexible container constructed to enclose a first compartment, said container having flexible wall means and at least one port;

a second container constructed to enclose a second compartment, said second container having a throat and a removable stopper disposed at least partially within said throat, said second container being secured to said first flexible container through said wall means of said first flexible container with said throat and stopper disposed inwardly relative to said compartment;

stopper removal means with a portion thereof operatively positioned within said first compartment and connected to said removable stopper for removing said stopper;

said flexible wall means being of a material and construction such that the wall means is deformable inwardly for manipulation of said stopper removal means through said wall means;

said stopper constructed and arranged to be removable from said second container by such manipulation of said stopper removal means from outside said flexible container wall means;

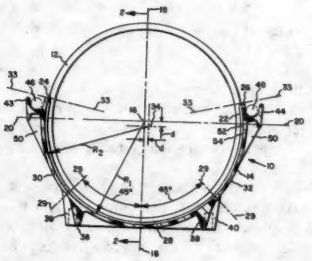
whereby through exterior manipulation from outside said wall means of said flexible container the stopper of said second container may be removed from said second container allowing the fluid contents of the containers to intermix through the throat of said second container.

4,614,268

BEAD TRANSPORTING CONTAINER

Lawrence E. Chlebina; Steven J. Portalupi, both of Akron, and Michael W. Smith, Brimfield, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 31, 1985, Ser. No. 761,060
Int. Cl.[4] B65D 85/02
U.S. Cl. 206—304 9 Claims



1. A container for storing and transporting annular tire beads having substantially the same inner diameter and different outside diameters and which are of the type that cannot be stacked or positioned close together because they stick together comprising a generally cylindrical wall member disposed about a central axis at the intersection of the midplane and center plane of said wall member, an opening in said wall member extending axially of said container providing spaced-apart axially extending wall member side portions and a wall member center portion, said wall member center portion having a first radius of curvature about said central axis and each of said wall member side portions having a second radius of

curvature substantially the same as said first radius of curvature, said second radius of curvature having an axis offset from said center plane in a direction toward the opposite side portion and offset from said midplane in a direction toward said center portion, said wall member being of a resilient material to provide for yieldably spreading said wall member side portions for gripping said annular tire beads during transporting and storing and for removal of said tire beads from said container and separating members at spaced-apart positions axially of said wall member for preventing axial movement of said annular tire beads containe : in compartments between said separating members so that they do not stick together.

4,614,269

PACKAGING CONTAINER FOR A TAPE REEL DEVICE E.G. A TAPE CASSETTE

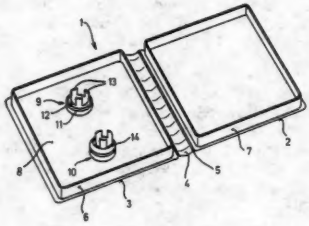
Herbert Dietze, Berghaupten; Dietmar Huebner, Oberkirch; Friedhelm Wagner, Birkenau; Manfred Duebon, Willstaett, and Gerd Wenz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 25, 1985, Ser. No. 726,985

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1984, 8412949[U]

Int. Cl.[4] B65D *85/07*

U.S. Cl. 206—387 **5 Claims**



1. A container for packaging a recording tape cassette, comprising at least one tape reel with a central opening, while not in use, said container including at least one reel-locking element with an outer ring portion at its base having a first diameter and an inner ring portion at its top having a second diameter smaller than said first diameter, said diameter being substantially the same as the diameter of said central opening of said tape reel,

wherein around the second, smaller diameter, there is provided an annular elastic friction element having an internal diameter substantially corresponding to the second, smaller diameter of said top ring portion and having an external diameter larger than the central opening of the tape reel, said annular friction element being of a material having a high coefficient of friction with respect to plastic material,

whereby in the open position of the container, the tape reel is supported on the friction element which prevents rotation of the tape reel by means of the frictional force between the frictional material and the plastic material of the reel, and in the closed position of the container, the tape reel is clamped onto said elastic friction element and thereby exerts an additional axial force for preventing axial movement and lateral or rotary movement of the contained tape reel.

4,614,270

MAGNETIC TAPE CASSETTE

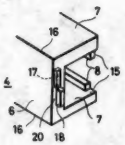
Kengo Oishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

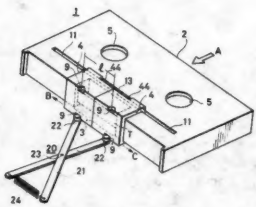
Filed Sep. 12, 1984, Ser. No. 649,582

Claims priority, application Japan, Sep. 16, 1983, 58-142350[U]; Sep. 22, 1983, 59-145883[U]; Sep. 24, 1983, 58-146684[U]

Int. Cl.[4] B65D *85/672*

U.S. Cl. 206—389 **5 Claims**





1. In a magnetic tape cassette having a magnetic head inserting opening in a front wall of a cassette case and receiving a pair of hubs on which a magnetic tape is wound, the improvement wherein said magnetic tape cassette comprises:

a pair of slidable guard panels for closing said opening, each guard panel being substantially U shaped in vertical section and having slide parts engaged with slide grooves formed in the upper and lower walls of said cassette case behind said opening and extending along said front wall of said cassette case, said guard panels having end faces brought into contact with each other when said guard panels close said opening, each end face having a recess and a protrusion arranged vertically, said recesses and protrusions being symmetrical and of like configurations; and

means for urging said guard panels to close said opening,

said cassette being symmetrical in configuration.

2. In a magnetic tape cassette having a magnetic head inserting opening in a front wall of a cassette case and receiving a pair of hubs on which a magnetic tape is wound, the improvement wherein said magnetic tape casette comprises:

a pair of slidable guard panels for closing said opening, each guard panel being substantially U shaped in vertical section and having slide parts engaged with said grooves formed in the upper and lower walls of said cassette case behind said opening and extended along said front wall of said cassette case; and

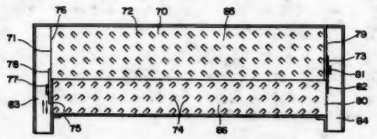
a tension spring connected between said two guard panels to urge said guard panels to close said opening,

said cassette being symmetrical in configuration.

4,614,271
SEPARATING ELEMENT FOR VIBRATORY GRAIN SEPARATOR

Shoichi Yamamoto, 813-17 Oaza Tendou Kow, Tendou-shi, Yamagata-ken, Japan

Division of Ser. No. 522,029, Aug. 11, 1983, Pat. No. 4,577,552. This application Aug. 31, 1984, Ser. No. 645,853
Claims priority, application Japan, Jun. 17, 1983, 58-108889
The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.
Int. Cl.[4] B07D *13/10*
U.S. Cl. 209—694 **2 Claims**

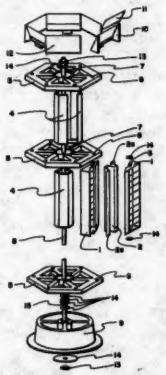


1. A separating element for a vibratory grain separator, said element consisting of a single metal plate having a rectangular shape, said separating element having a hulled rice outlet and an unhulled rice outlet, said outlets being provided on the opposite side edges, respectively, of said separating element, a major portion of the top surface of said separating element being formed with a first plurality of spaced, hulled rice guiding protuberances inclined obliquely to said hulled rice outlet for moving the hulled rice toward said hulled rice outlet and a minor portion of said top surface of said element having formed thereon a second plurality of spaced, unhulled rice guiding protuberances fewer in number than said first plurality, and inclined obliquely to said unhulled rice outlet for moving the unhulled rice toward said unhulled rice outlet.

4,614,272
COMMODITY DISPLAY DEVICE

Robert N. Shelton, Leominster, Mass., and Gail S. Mowrer, Nashua, N.H., assignors to Foster Grant Corporation, Leominster, Mass.

Filed May 3, 1984, Ser. No. 606,799
Int. Cl.[4] A47F *5/02*
U.S. Cl. 211—163 **30 Claims**

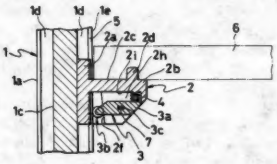


1. A commodity display device comprising one or more two-sided columns each of which comprising a box-like outer part having substantially open front and back faces, a vertical column insert having an S-shaped horizontal cross-section adapted to be positioned inside said box-like outer part; a column support device adapted to rotatably support said one or more columns in one or more levels and reposition said one or more columns to predetermined positions at rest, each of said columns having a plurality of horizontal retaining means on the front and back faces thereof which are substantially open, and each of said retaining means being adapted to retain one or more commodities thereon.

4,614,273
FREE STOP RETAINER

Hiroyuki Ishii, Tokyo, Japan, assignor to Sugatsune Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 616,807
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—183 **5 Claims**



1. A free stop retainer comprising:
(a) a retainer body (2) with an upper and a lower side, an engaging portion, (*2a*), and an article retaining portion (*2b*);
(b) a post (1) with a side wall (*1e*) having a rail hole (5), said side wall (*1e*) having an inner and an outer surface also at least one longitudinal groove (*1d*), said engaging portion (*2a*) being elevationally slidably engaged in the longitudinal rail hole (5) of the side wall (*1e*) in such a manner that said article retaining portion (*2b*) is outwardly projected from the rail hole (5) of the side wall (*1e*);
(c) a tapered surface extending from said engaging portion (*2a*) along one of the surfaces of the side wall (*1e*) to define a groove (*2g*) with an upper closed end and a lower open end in such manner that the space next to the side wall is at the maximum width at the lower end of the defined groove (*2g*) and at the minimum width at the upper end of the defined groove;
(d) a lever (3) rotatably held in the article retaining portion (*2b*) with a stopper (*3b*) at one end and a lever actuating portion at the other end thereof, the stopper (*3b*) being disposed in the defined groove (*2g*) and guided along the tapered surface, and,
(e) spring means acting on the other end of said lever (3) urging said stopper (*3b*) against the side wall (*1e*).

4,614,274
CONTROL SYSTEM FOR AUTOMATIC MATERIAL HANDLING CRANE

Dean R. LaValle, Hugo, and Philip A. McLain, Isanti, both of Minn., assignors to PaR Systems Corp., St. Paul, Minn.

Division of Ser. No. 214,190, Dec. 8, 1980, Pat. No. 4,456,132. This application May 3, 1984, Ser. No. 606,647
Int. Cl.[4] B66C *13/40*
U.S. Cl. 212—160 **5 Claims**

1. A system for performing material handling at a plurality of stations, the system comprising:
movable means movable to each of the plurality of stations;
a material handling mechanism carried by the movable means;
drive means for moving the movable means;
actuator means for operating the material handling mechanism;
means for providing signals indicative of the position of the movable means;
means for providing signals indicative of operating status of the material handling mechanism;

manual control means carried by the movable means for providing manual control signals;

remote control means, positioned at a remote location with respect to the movable means, for providing remote control signals based on a stored schedule and status information relating to the movable means and the material handling mechanism the remote control means comprising:

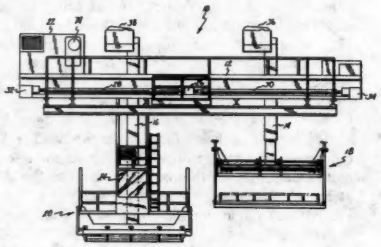
station location storage means for storing a first set of data representative of a location for each station;

service step storage means for storing a second set of data representative of a sequence of individual operating steps of the movable means and the material handling mechanism for each of a plurality of different types of material handling service which can be performed by the movable means and the material handling mechanism at the stations;

operator controlled schedule creating means for producing first, second and third operator input signals to create a third set of data representing the schedule the operator controlled schedule creating means comprising:

first operator input means for providing a first operator input signal which identifies a series which is included in the schedule, wherein the series denotes a plurality of stations at which the same type of material handling service is to be performed;

second operator input means for providing a second operator input signal which identifies which of the stations represented by the first set of data are included in the identified series; and



third operator input means for providing a third operator input signal which identifies which of the plurality of different types of service represented by the second set of data is to be performed at the identified stations of the identified series;

schedule storage means for storing the third set of data representing the schedule based upon the first, second and third operator input signals; and

remote control signal producing means for producing the remote control signals which represent each step of operation of the drive means and the actuator means during the schedule based upon the first, second and third sets of data and the status information;

selection means for selecting control signals from among manual control signals and the remote control signals;

control means carried by the movable means for providing control signals to the drive means and the actuator means as a function of the selected control signals, and for providing the status information as a function of the signals indicative of position of the movable means and the signals indicative of operating status of the material handling mechanism;

first microwave transmitter means at the remote location for transmitting a first microwave beam to the movable means, the first microwave beam having a subcarrier for providing the remote control signals;

second microwave transmitter means carried by the movable means for transmitting a second microwave beam to the remote location, the second microwave beam having first and second subcarriers, the first subcarrier providing the status information and the second subcarrier indicating whether the control means carried by the movable means is operating;

first microwave receiver means at the remote location for receiving the second microwave beam; and

second microwave receiver means carried by the movable means for receiving the first microwave beam; and

wherein the remote control means further includes disable means for disabling operation of the movable means and the material handling mechanism if only one of the first and second subcarriers is present in the second microwave beam as received by the first microwave receiver means.

4,614,275

HEAVY DUTY CRANE

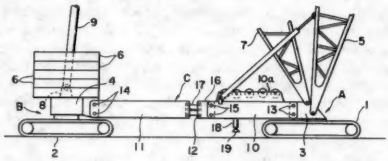
Yoshizumi Zenno, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 2, 1984, Ser. No. 606,186

Claims priority, application Japan, May 11, 1983, 58-82160

Int. Cl.[4] B66C *23/72*

U.S. Cl. 212—198 **6 Claims**



1. A heavy duty crane comprising:

a first mobile and swivellable base unit;

a boom mounted on said first base unit;

a second mobile and swivellable base unit;

a counterweight mounted on said second base unit;

a gantry structure on and across said first and second base units;

a link frame interconnecting said first and second base units along a line therebetween, said link frame comprising:

(a) a rigid front frame elongated along said line and having a fore end thereof connected to said first base unit by means preventing said front frame from pivoting about a horizontal axis relative to said first base unit;

(b) a rigid rear frame elongated along said line and having a rear end thereof detachably connected to said second base unit, and

(c) an intermediate link member connecting said front and rear frames, said intermediate link member including means having a variable length along said line and permitting relative movement between said front and rear frames; and

a winch mechanism for said boom and said gantry structure, said winch mechanism being mounted on said front frame.

4,614,276

LAMINATED RUBBER STOPPER

Kiyohiko Ihara, Suita, and Tsuneo Nakagawa, Ibaraki, both of Japan, assignors to Daikin Industries, Osaka and Kabushiki Kaisha Daikyo Gomu Suki, Tokyo, both of, Japan

Filed May 21, 1985, Ser. No. 736,312

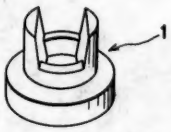
Claims priority, application Japan, May 22, 1984, 59-104044; Mar. 26, 1985, 60-062826

Int. Cl.[4] B65D *39/00*

U.S. Cl. 215—364 **4 Claims**

1. A laminated rubber stopper comprising a head portion and a leg portion which is to be inserted in an opening of an vessel, wherein at least a leg portion is laminated with a film of a

copolymer of tetrafluoroethylene, ethylene and at least one fluorine-containing vinyl monomer copolymerizable with tetrafluoroethylene and ethylene, a molar ratio of tetrafluoro-



ethylene and ethylene being from 62:38 to 90:10 and the amount of the fluorine-containing vinyl monomer being from 0.1 to 10% by mole based on the total number of mole of tetrafluoroethylene and ethylene.

4,614,277

PALLET WITH TENSIONED STRIPS AND BULK BIN

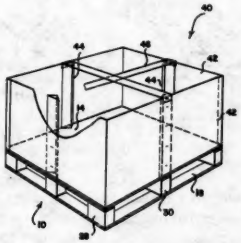
Gideon Fourie, King Williamstown, and David E. Muir, Pinelands, both of South Africa, assignors to South African Inventions Development Corporation, Pretoria, South Africa

Filed May 22, 1985, Ser. No. 736,677

Claims priority, application South Africa, May 22, 1984, 84/3858; Jul. 17, 1984, 84/5515

Int. Cl.[4] B65D *19/31*

U.S. Cl. 217—43 A **10 Claims**



1. A method of manufacturing a pallet which method comprises constructing a frame consisting of planks secured to spacer elements on one side of the planks, exerting forces on the frame so as to deform the frame into a dish-like form thereby reducing both its overall length and its overall width, joining the spacer elements to one another by means of tensionable material, the material extending chordally across the deformed frame, and removing the deforming forces from the frame so that it straightens and exerts tensioning forces on said material, said planks, spacer elements and material defining laterally open entrances for the tines of a forklift truck.

4,614,278

TANK CONTAINER

Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Westerwaelder Eisenwerk Gerhard GmbH, Weitefeld, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 678,794

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 8335251[U]

Int. Cl.[4] B65D *19/28, 88/12*

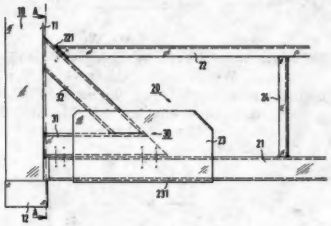
U.S. Cl. 220—1.5 **9 Claims**

1. A tank container arrangement comprising:

a tank means;

two end frame means joined to the respective opposite ends of said tank means, each of said end frame means including vertical support means for forming together with said tank means a self-supporting tank container structure;

fixing members provided on the vertical support means, including support arm means fixably joined at a first end to the respective vertical support means and projecting in a longitudinal direction of said tank container, and inclined brace means extending obliquely upwardly from a second end of said support arm means and being fixably joined to said vertical support means; and



side protection assembly means detachably secured between the respective said end frame means for protecting a portion of said tank means therebetween, wherein said side protection assembly means includes respective lower and upper longitudinal beam means disposed between said end frame means, said lower longitudinal beam means being removably joined to said support arm means and said upper longitudinal beam means being detachably joined to said inclined brace means.

4,614,279

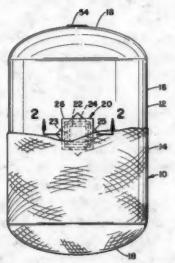
SIDE TAP OPENING FOR A FILAMENT-WOUND TANK

Michael J. Toth, Brecksville, and Robert G. Ensell, Kingsville, both of Ohio, assignors to ESSEF Industries, Inc., Mentor, Ohio

Filed Dec. 13, 1984, Ser. No. 681,366

Int. Cl.[4] B65D *25/34, 90/02, 90/06;* **B65H** *81/06*

U.S. Cl. 220—3 **6 Claims**



1. A filament-wound plastic pressure vessel comprising a monolithic plastic liner having a cylindrical side wall portion and domed end portions, a multiplicity of resin-impregnated reinforcing filaments wound about at least said cylindrical side wall portion in a predetermined winding pattern, a non-axial access opening cut through said pressure vessel and said filaments to provide discontinuous filament ends at the periphery of said opening, means to reinforce the filament ends by providing redistributed stress transmission paths around said opening, said reinforcing means being located between said liner and said reinforcing filaments and comprising at least two woven roving pads separated by a randomly oriented fibrous mat pad.

5. A method of making a filament-wound plastic pressure

vessel comprising the steps of providing a monolithic plastic liner having a cylindrical side wall portion and domed end portions, applying a reinforcement patch to the plastic liner, said reinforcing patch including at least one chopped fiber randomly oriented mat pad sandwiched between a pair of woven roving pads, winding a multiplicity of resin-impregnated reinforcing filaments about the plastic liner in a predetermined winding pattern, curing said resin, and cutting an opening through the reinforcing filaments, the reinforcing pad, and said plastic liner to provide access to the interior of the pressure vessel.

4,614,280

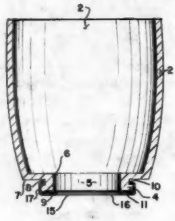
CUP AND APPARATUS AND METHOD FOR MAKING IT

Lawrance W. Wightman, 3 Ridgecreek, St. Louis, Mo. 63141

Continuation of Ser. No. 415,396, Sep. 7, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 639,679

Int. Cl.[4] B65D *6/34*

U.S. Cl. 220—67 **7 Claims**



1. A cup adapted to use with a warming unit, comprising a plastic body having an open mouth and a base part defining an opening, a radially outwardly extending flange around said base part, said flange having axially spaced, radially extending upper and lower planar surfaces substantially parallel to one another, a metal base closure of a metal having a lower coefficient of expansion than said plastic, said closure having a bottom wall and a rim around said bottom wall and extending higher than the upper surface of the said flange, said closure bottom wall extending continuously over said opening and beyond a radially outer edge of said flange parallel with said body flange lower radial planar surface, and an annular gasket between and in engagement with an upper surface of the bottom wall of said closure and said lower surface of said flange, said closure rim having staked over portions around its upper edge engaging said upper radially extending flange surface, the staked over portions thereof that engage said upper radially extending surface defining a plane substantially parallel with said bottom wall along said gasket and extending over said upper surface of said flange a distance greater than any anticipated distance of contraction or expansion of said flange relative to said staked portion of said closure rim upon repeated cycling of heating and cooling whereby said plastic flange can move radially, sandwiched between said bottom wall and said staked over portions, while maintaining its dimensional integrity axially between said bottom wall and said staked over portions.

4,614,281

CLOSURE AND METHOD FOR REPAIR OF A PRESSURIZED CONTAINER

James C. Wright, 1055 N. Miller, Mesa, Ariz. 85203

Filed Nov. 25, 1985, Ser. No. 801,464

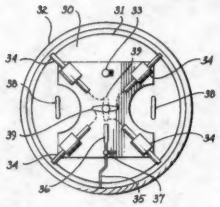
Int. Cl.[4] B65D *53/00*

U.S. Cl. 220—239 **17 Claims**

1. A temporary repair apparatus for securing gas leaking from ends of a container comprising:

plate means having a diameter generally smaller than the constricted end diameter of said container walls;

tube means coupled to the outer edge of said plate means, said tube means capable of being inflated, said tube means for preventing chemicals from escaping in a surround environment when said tube is inflated; and



mount means coupled to said plate means for securing said plate means against said constricted container walls.

4,614,282

CONNECTING MEANS FOR COVER

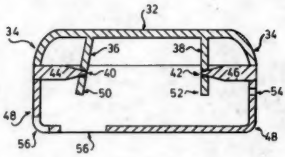
Thomas L. Faul, Washago, Canada, assignor to Teckserve Ltd., Ontario, Canada

Filed Jul. 31, 1985, Ser. No. 761,430

Claims priority, application Canada, Jul. 25, 1985, 487452

Int. Cl.[4] B65D *39/00*

U.S. Cl. 220—307 **19 Claims**



1. A connecting mechanism for connecting a one-piece, molded-plastic cover having an outer skirt extending downwardly from a peripheral region of the cover to a one-piece, molded-plastic body having at least a partially-hollow interior, comprising:

(a) two flexible leg-members, each extending downwardly from an interior region of the cover and each having an opening in the lower, central portion thereof; and

(b) two dog-members, each corresponding to a corresponding leg-member and shaped, sized and positioned within the body so as to be insertable within the opening in the corresponding leg-member when the cover is connected to the body;

wherein, when connected, the portion of each leg-member below its respective opening is accessible from the exterior of the body for applying sufficient flexure to the leg-member in order to release the leg-member from the corresponding dog-member.

4,614,283

DEPOSITIONING SINGLE PIECES OF GRAIN

Reinhard Becker, Oberweser, Fed. Rep. of Germany, assignor to Karl Becker GmbH & Co. KG, Oberweser, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 88,866

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847514

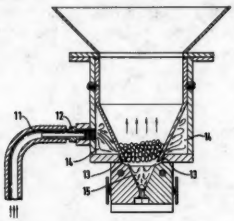
Int. Cl.[4] B65G *59/00*; A01C *7/04*

U.S. Cl. 221—278 **9 Claims**

1. Apparatus for depositing individual grains, such as seeds,

comprising: a frame; storage means for the grain in the frame and having a funnel-shaped, but open, lower portion;

a pair of brackets pivotally mounted to a lower portion of the frame, underneath said storage means, said brackets,



when closed, defining a funnel-shaped chamber with a narrow duct opening;

means for pivoting at least one bracket of the pair to thereby temporarily widen the duct; and

means for blowing air into the chamber from above.

4,614,284

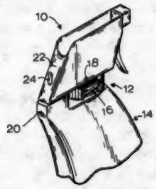
CO-DISPENSER

Gilbert Miles, Croton-on-Hudson, N.Y., assignor to Walter Leeds, Fort Lee, N.J.

Filed Jun. 22, 1984, Ser. No. 623,326

Int. Cl.[4] B67D *5/40*

U.S. Cl. 222—331 **7 Claims**



1. A co-dispenser package comprising in combination; a container comprising a body; a neck at the top of the body having an opening for introducing and removing product from the body; a sealed spout extending from the body; the spout capable of being severed to provide a co-dispensing outlet; a dispensing pump mounted on the neck for selectively dispensing the product from the container; the pump including a shroud; an opening in the shroud, and the spout extending through the opening in the shroud and that portion of the spout extending beyond the shroud is the portion of the spout capable of being severed.

4,614,285

DEVICE FOR THE DOSED DISPENSING OF LIQUID

Manfred Fudalla, Weener/Holthasen, and Walter Steiner, Leer/Heisfelde, both of Fed. Rep. of Germany, assignors to Weener Plastik GmbH & Co. KG, Weener/Ems, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 630,929

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326025

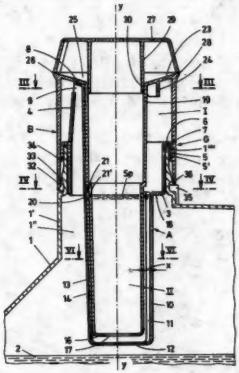
Int. Cl.[4] G01F *11/26*

U.S. Cl. 222—454 **10 Claims**

1. In a device adapted for the dosed dispensing of liquid from a storage container through a delivery tube which comes out of a lower pouring chamber upon a second upside down turning, a housing shaped as a cup having a transverse wall at a bottom of the cup and defining an upper chamber, the pouring chamber and the upper chamber communicating with each other through a flow hole, the transverse wall being traversed by a feed tube opening thereabove, said delivery tube projecting above the feed tube and an air passage-extends through the transverse wall, the improvement comprising

at least three of said feed tubes arranged in symmetrical angular distribution with a respective said air passage opening arranged between them,

said upper chamber is developed as a flood chamber and said pouring chamber further has an overflow opening, and



a beaker extends below the upper chamber, said pouring chamber extends from said delivery tube and is arranged with flow clearance within said beaker, said beaker is formed with another hole at approximately the height of the transverse wall, said another hole is in communication with said overflow opening.

4,614,286

TONER CONTAINER UNIT

Keisuke Yamaguchi, Tokyo, and Eturo Ochiai, Sagamihara, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,093

Claims priority, application Japan, Jul. 2, 1982, 57-100993[U]

Int. Cl.[4] B65D *25/38*

U.S. Cl. 222—505 **1 Claim**

1. A toner container unit for detachable mounting on an electrostatic recording means comprising:

a toner container body having an opening therein and having a surface around the periphery of said opening;

a sliding cover having an inside surface, an outside surface, and opposite ends and slidably mounted on said container body for movement between closed and open positions relative to said opening;

a film-like sheet having opposite ends and disposed around the opposite ends of said cover so as to extend over the outside surface and at least a portion of the inside surface of said cover, both ends of said sheet being fixedly secured to said container body near a side of said opening, said sheet being movable by said cover;

and adhesive means between said sheet and said container body for initially adhesively and detachably securing that

portion of said sheet between said body and said inside surface of said cover to said surface around said opening to seal said opening when said cover initially is in closed position;

said cover being slidably movable initially from closed to open position to move said sheet and to peel said portion of said sheet from said surface to which it is adhesively and releasably secured to unseal said opening, said cover being slidably movable from open to closed position to move said sheet and to reclose said opening.

4,614,287

PIN TRACTOR

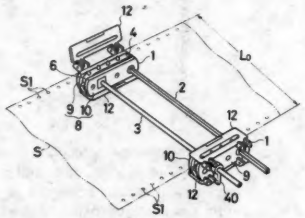
Toshihiko Ueno, Kobe, and Sadao Tanimoto, Akashi, both of Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Filed May 24, 1985, Ser. No. 737,539

Claims priority, application Japan, May 30, 1984, 59-80081[U]; May 30, 1984, 59-80082[U]; May 30, 1984, 59-80083[U]; Apr. 22, 1985, 60-60536[U]

Int. Cl.⁴ G03B *1/30*

U.S. Cl. 226—74 **6 Claims**



1. A pin tractor including a first frame portion, a second frame portion, said first and second frame portions forming a frame, at least one presser member, said frame portions and said presser member comprising a synthetic resin, one said frame portion having at least one support part adapted to rotatably support said at least one presser member, said frame adapted to rotatably support an endless belt, said belt including pins adapted to engage openings in paper, said presser member including a slot, said presser member with said slot adapted to hold said paper between said presser member and said frame, said slot further adapted to receive said pins moving therethrough without obstruction, said at least one presser member including at least one pair of arms, at least one of said pair of arms adapted to act as a pawl, each said arm including a pivot, said at least one support part including openings adapted to rotatably receive said pivots, said at least one support part including at least one concavity adapted to resiliently hold said pawl.

4,614,288

APPARATUS FOR LOCKING A MECHANICAL DEVICE OUT OF ENTRAINMENT

Jean Torres, Lausanne, Switzerland, assignor to Societe Anonyme de Plieuses Automatiques, Ecublns, Switzerland

Filed Jan. 31, 1985, Ser. No. 696,453

Claims priority, application Switzerland, Feb. 6, 1984, 545/84

Int. Cl.⁴ B65H *20/16*

U.S. Cl. 226—165 **5 Claims**

1. Apparatus for actuating and locking a mechanical member, especially a paper gripper in a packaging machine, comprising:

rotary actuating means;

a connecting rod for converting rotary movement to alternating pivoting movement;

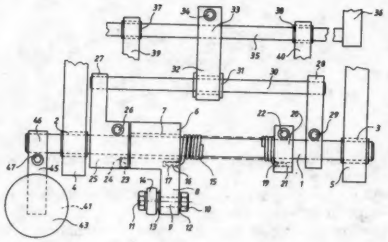
an actuating mechanism for transmitting said alternating pivoting movement to said mechanical member; and

means for locking said mechanical member, characterized in that said locking means comprise:

a first lever (**6**) connected to said connecting rod (**14**) and coupled with said rotary actuating means (**1**) by resilient means (**15**);

a second lever (**25**) coupled with said rotary actuating means (**1**) and with said actuating mechanism (**30–38**);

coupling means (**23, 24**) associated with said first and second



levers for transmitting pivoting movement from said first lever to said second lever in a direction towards a locking position of said second lever; and

an electromagnet (**41**) which locks upon energization said rotary actuating means (**1**) and said actuating mechanism (**30–38**) in a position corresponding to said locking position of said second lever (**25**), so as to thereby lock said mechanical member (**36**) without interrupting the alternating pivoting movement of said first lever (**6**).

4,614,289

MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING AT LEAST ONE CAPSTAN

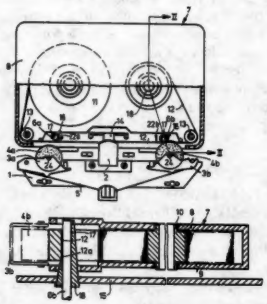
Henricus M. Ruyten, Wetzlar, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 7, 1985, Ser. No. 731,635

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417730

Int. Cl.⁴ G11B *23/023, 23/087*

U.S. Cl. 226—181 **18 Claims**



1. A magnetic tape cassette apparatus comprising a deck plate, at least one rotatable capstan extending above said deck plate, a pressure roller cooperating with said capstan and supported by said deck plate for rotation with said capstan, a lower sleeve part with a bore and an upper sleeve part, said capstan extending through said bore and having its part extending above said deck plate surrounded by said upper sleeve part at least on the side of said capstan remote from said pressure roller, said lower and upper sleeve parts consisting of one

piece of material and said lower part having a spiral groove bearing formed in the inner wall of its bore.

4,614,290

SADDLE STITCHING MACHINE FOR SIGNATURES AND THE LIKE

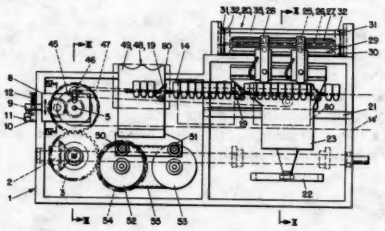
Heinz Boss, Strengelbach, Switzerland, assignor to GRAPHA-HOLDING AG., Hergiswil, Switzerland

Filed Dec. 18, 1984, Ser. No. 682,918

Claims priority, application Switzerland, Jan. 26, 1984, 362/84

Int. Cl.⁴ B21J *15/28*; B42C *1/12*

U.S. Cl. 227—1 **20 Claims**



1. A convertible cyclically operated saddle-wire stitching machine for the application of wire staples across the folds of a series of stacked groups of sheets, comprising a variable-pitch conveyor for accommodating different numbers of groups of sheets, said conveyor defining an elongated straight path for advancement of the groups of sheets; means for driving said conveyor; a reciprocable carriage arranged to perform a back-and-forth stroke along said path during each cycle of the machine; means for reciprocating said carriage, including means for varying the length of said strokes so as to conform the length of said strokes to the selected pitch of said variable-pitch conveyor; staple applying and deforming devices provided on said carriage and actuatable to drive staples through successive groups of sheets on said conveyor and to thereupon clinch such staples; and means for actuating said devices, including elongated cams extending longitudinally of said path and means for moving said cams substantially transversely of said path.

4,614,291

REINFORCED MAGAZINE FOR GUIDING FASTENERS

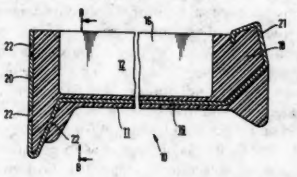
Umberto Monacelli, Via Milazzo 1, 20 552 Monza, Italy

Filed Nov. 30, 1984, Ser. No. 676,993

Claims priority, application United Kingdom, Dec. 2, 1983, 8332273

Int. Cl.⁴ B25C *5/16*

U.S. Cl. 227—120 **12 Claims**



1. A guide bench for guiding fastener elements to be driven along an ejection runway by fastener guiding apparatus, the bench comprising a guide section for guiding fastener elements to said ejection runway and a retaining portion for contact by retaining means in said apparatus, wherein:

a major portion of the bench is of synthetic plastics material;

first and second metal portions are embedded in said plastics material;

a surface of said first metal portion is exposed and shaped to form a wall of said ejection runway; and

a surface of said second metal portion is exposed and forms said retaining portion;

wherein at least one of said metal portions has an angularly bent section re-entering said plastics material.

4,614,292

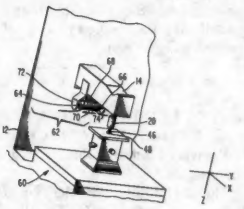
DIE BONDER WITH ELECTRICALLY DRIVEN SCRUBBING MEANS

Carl Polansky, Landisville, Pa., and Frank Z. Hawrylo, Trenton, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 30, 1985, Ser. No. 781,987

Int. Cl.⁴ B23K *1/06*

U.S. Cl. 228—1.1 **4 Claims**



1. In a die bonder for bonding a semiconductor die to a substrate comprising:

a frame;

a support assembly within said frame, which supports an arm;

means attached to said arm for holding a semiconductor die;

means for moving said arm and holding means along the three orthogonal axes; and

electrical scrubbing means for oscillating said arm and holding means at a low frequency along the axis perpendicular to the arm and in the plane parallel to the interface of the die and the substrate wherein said electrical scrubbing means comprises an electromagnetic coil with a plunger therethrough, which plunger is disposed so that when electrical power is applied to the coil, the plunger periodically contacts said arm at the frequency of the power applied;

the improvement wherein said electrical scrubbing means further comprises a flexible tab integral with said arm, which tab is contacted by the plunger, wherein the flexibility of the tab provides that upon oscillation the displacement of the holding means is less than the displacement of the plunger.

4,614,293

SHAPING DEVICE FOR CYLINDRICAL CONTAINERS FOR USE WITH A CONTINUOUS WELDER

Luigi Pazzaglia, Bologna, Italy, assignor to CEFIN S.p.A., Bologna, Italy

Filed May 21, 1985, Ser. No. 736,324

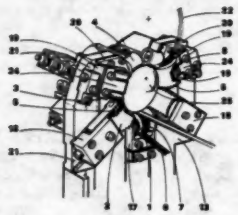
Claims priority, application Italy, Jun. 22, 1984, 3499 A/84

Int. Cl.⁴ B23K *37/04*

U.S. Cl. 228—17 **3 Claims**

1. A device for shaping cylindrical containers to a standard size suitable to be fed to a continuous welder, comprising several sets of shaping rollers, each set of rollers being disposed along a circumference of an opening receiving tin plates, the rollers of at least one of said sets being provided with gauged surfaces and innerly defining said opening having the same diameter as the cylindrical container which is to be shaped,

means for powering one or more of said gauged rollers at a constant speed, a set of belts entraining welded cylindrical containers, at least one of said entraining belts being powered at a constant speed, wherein said powered belt is an innerly



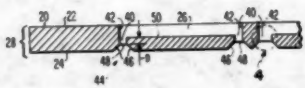
toothed belt and wherein one of said powered gauged rollers is provided, on its gauged surface, with teeth designed for meshing with the belt, said belt having an outer surface opposite said teeth for establishing the gauged surface of the toothed region of said powered gauged roller.

4,614,294

APPARATUS FOR HOLDING A PART IN A WAVE SOLDERING MACHINE

Charles A. Weaver, Findlay, Ohio, assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 29, 1985, Ser. No. 792,473
Int. Cl.[4] B23K *1/08*
U.S. Cl. 228—37 **13 Claims**



1. In a wave soldering machine containing a quantity of molten solder having a surface, a portion of said surface being displaced upwardly, an apparatus for holding a part to be tinned comprising:

(a) holding means for holding said part in engagement with said molten solder during tinning thereof;

(b) other means associated with said holding means for inhibiting engagement of a portion of said part with said molten solder comprising:

(i) an opening through which said portion of said part projects; and

(ii) a pair of beveled surfaces, one of which intersects said opening, said surfaces being resistant to wetting by said molten solder and arranged to inhibit invasion of said opening by said solder.

4,614,295

SOLDERING IRON AND SOLDERING APPARATUS

Walter Köchli, Hünibach, Switzerland, assignor to Prenco AG, Liechtenstein

Filed Feb. 15, 1984, Ser. No. 580,471
Claims priority, application Switzerland, Feb. 21, 1983, 958/83; Fed. Rep. of Germany, Nov. 4, 1983, 8331710[U]
Int. Cl.[4] B23K *3/00*
U.S. Cl. 228—53 **16 Claims**

1. A soldering iron for use in a soldering apparatus, comprising:

a body;

a heating element on the body and having a tip disposed in a forward direction from the body for heating a soldering area;

a guide tube having an inner opening for feeding soldering wire to the soldering area, the guide tube being mounted to the body and extending in the forward direction therefrom, the guide tube having a free end disposed adjacent the tip of the heating element for directing soldering wire into the soldering area as it is fed through the inner opening; and

a tube shaped guide member mounted in the inner opening of the guide tube and extending in the forward direction at least to the free end of the guide tube for guiding the soldering wire, the guide member having at least one annular inward projecting bead that surrounds said solder wire in substantially circumferential line contact and for guiding the soldering wire into the soldering area at a position adjacent the heating element tip.

12. A soldering apparatus comprising:

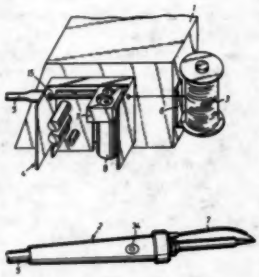
(1) a feeding mechanism for feeding soldering wire, comprising:

(A) a frame;

(B) a support on the frame for supporting a soldering wire storage means;

(C) a motor on the frame for feeding soldering wire from the soldering wire storage means; and

(D) a power circuit for providing power to the motor, the power circuit comprising;



(i) a switch for opening and closing for turning the motor off and on, respectively; and

(ii) a braking circuit for braking the motor and for stopping the feeding of the soldering wire immediately when the switch is opened to turn off the motor wherein the motor has a positive and a negative pole and a pnp transistor has an emitter connected to the positive pole of said motor, a collector connected to the negative pole of said motor, and a base connected to the switch, the braking circuit further comprising a diode connected between the base and the emitter of the transistor for conducting power to said motor and for maintaining said transistor in a non-conducting state when said switch is closed and for being reverse biased when said switch is opened so as to permit said transistor to enter a conducting state for short-circuiting the poles of said motor;

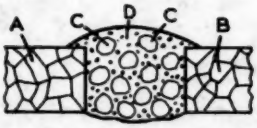
(2) a feeding tube connected for receiving the soldering wire as it is fed by the feeding mechanism; and

(3) a soldering iron connected for receiving the soldering wire from the feeding tube and for directing the soldering wire into a soldering area.

4,614,296
DIFFUSION BRAZING PROCESS FOR PIECES OF SUPERALLOYS

Jacques Lesgourgues, Corbeil, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Evry, France

Continuation of Ser. No. 409,285, Aug. 18, 1982, abandoned. This application Mar. 5, 1985, Ser. No. 708,103
Claims priority, application France, Aug. 26, 1981, 81 16283
Int. Cl.[4] B23P *6/04*; B23K *1/04*
U.S. Cl. 228—194 **8 Claims**

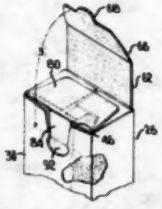


1. A process for diffusion brazing a layer of material between faces defined by an article formed by nickel or cobalt base superalloys comprising the steps of:
(a) forming the layer of material from a mixture having properties identical to the superalloys and formed of at least two alloy powders in appreciably unequal proportions, the two alloy powders comprising (i) a base powder of NK17CDAT (Astroloy) forming approximately 75% by weight of the mixture and (ii) an addition powder forming approximately 25% by weight of the mixture, the addition powder being a Ni B Cr alloy such that the liquidus temperature of the addition powder is lower than the solidus temperature of the base powder and the article;
(b) placing the layer of material between the faces of the article;
(c) heating the assembly to a temperature sufficient to melt the addition powder, but not the base powder or the article, the melted addition powder being retained in the base powder by capillary action; and,
(d) subjecting the assembly to a diffusion brazing heat treatment.

4,614,297
TAMPER RESISTANT CARTON

Robert E. Davis, Nutley; Patrick S. Maio, Ringwood, both of N.J., and Lawrence J. Growney, Pearl River, N.Y., assignors to Federal Paper Board Co., Inc., Montvale, N.J.

Filed May 22, 1984, Ser. No. 613,043
Int. Cl.[4] B65D *5/08*
U.S. Cl. 229—132 **20 Claims**



1. A tamper resistant carton comprising a body and at least one sealed openable end; said body comprising front and rear panels and at least two opposite side panels, and inner and outer terminal panels, said outer terminal panel overlapping one of said side panels for at least substantially the full width of said one side panel and having an overall bond with said one side panel, said inner terminal panel being disposed inwardly of said front panel and having at least a central portion thereof bonded to an inner surface of said front panel, an end portion of said inner terminal panel adjacent said one sealed openable end of said carton being free of said front panel and defining a space between said inner terminal panel and said front panel opening axially at said one carton end; said one sealed openable end including a closure flap carried by said rear panel, and a tuck flap carried by said closure flap, said tuck flap being positioned inwardly of said front panel with at least a portion of said tuck flap being positioned in said space between said inner terminal panel and said front panel, said tuck flap having an inner surface bonded to an adjacent portion of the outer surface of said inner terminal panel in a non-accessible position whereby said one sealed openable end can be opened only by rupturing at least one of said panels or flaps, said inner terminal panel being a partial panel and generally in the form of a glue flap foldably carried by one of said side panels.

4,614,298
OCTAGONAL BULK BIN

James H. Cherry, Marion, Iowa, assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 485,514, Jan. 17, 1983, abandoned, which is a continuation of Ser. No. 255,583, Apr. 20, 1981, abandoned. This application Feb. 26, 1985, Ser. No. 705,414
Int. Cl.[4] B65D *5/10*
U.S. Cl. 229—109 **8 Claims**

1. An octagonal bulk bin comprising
a pair of opposed side panels;
a pair of opposed end panels;
pairs of opposed corner panels extending between said side and end panels, said corner panels being narrower than said side and end panels;
said side, end and corner panels having a common bottom edge and common top edge;
said side, end and corner panels being substantially rectangular;
said side, end and corner panels defining a space having sides defined by said side, end and corner panels, a top defined by said top edge and a bottom defined by said bottom edge;
said bottom being closed by a bottom closure;
said bottom closure comprising
corner closure flaps having an edge hinged to said bottom edges of said corner panels and a free inner edge opposite its hinged edge;
said corner closure flaps extending across said bottom and being substantially aligned with said bottom edge;
each of said corner closure flaps being substantially rectangular;
side closure flaps having an edge hinged to said bottom edge of said side panels and a free inner edge opposite its hinged edge;
the distance between said hinged edge and said free inner edge being one-half the distance between said side panels;
the distance between said hinged edge and said free inner edge of each said side closure flap being equal to the distance between said hinged edge and free inner edge of each said corner closure flap;
each of said side closure flaps having a pair of obliquely oriented apertures;
each of said apertures extending across a side closure flap free corner defined by said free inner edge of said side

closure flap and a side edge of said side closure flap and between two points located within said side closure flap; the first of said points being near a side edge of said side closure flap and nearer said hinged edge of said side closure flap than said second point; and the second of said points being nearer said side closure flap center line transverse to said hinged edge than said first point and nearer said free inner edge of said side closure flap than said first point;

the placement of said apertures in one side closure flap being identical to the placement of said apertures in the other side closure flap;

each aperture in a side closure flap being a mirror image of the other aperture in the same side closure flap;

said side closure flaps extending across said bottom along the outer faces of said corner closure flaps;

said apertures being spaced from said side panel to which said side closure flap is hinged;

end closure flaps having an edge hinged to said bottom edge of said end panels and a free inner edge opposite its hinged edge;

the maximum distance between said hinged edge and said free inner edge of each said end closure flap being less than one-half the distance between said end panels;

each of said end closure flaps being substantially rectangular;

the distance between said hinged edge and said free inner edge of each of said end closure flaps being equal to the distance between said hinged edged and said free inner edge of each of said corner closure flaps;

each of said end closure flaps extending across said bottom along the outer faces of said side and corner closure flaps, through said oblique apertures and having its free corners extending along the inner face of said side closure flaps;

said end closure flaps being held from length and width movement by the two-way lock on each of said end closure flap by said apertures.

4,614,299

ARTICLE WHICH DISPENSES AT A CONSTANT RATE A VOLATILE COMPOSITION, AND PROCESS FOR USING SAME

Augustinus G. Van Loveren, Rye; Marina A. Munteanu, New York, both of N.Y., and Geoffrey B. Seaber, Ijsselstein, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,085

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.[4] A61L *9/04, 9/01, 9/12*

U.S. Cl. 239—6 **12 Claims**

1. A hollow totally enclosed structure capable of the release into the space surrounding said structure at a substantially constant rate of at least one volatile material consisting of volatile material molecules, said volatile material being selected from the group consisting of perfume compositions, herbicide compositions, insecticide compositions, animal repellent compositions, air freshener compositions, pheromone compositions, odor maskant compositions, deodorant compositions, insect repellent compositions and compositions for the evaluation of olfactory functioning in humans; said structure comprising:

(i) a first thin finite hemi-ellipsoidal shell having a first single continuous circumference; and

(ii) a second thin finite hemi-elliposoidal shell having a second single continuous circumference totally abutting and in continuous intimate contact with said first single continuous circumference, said first thin shell and said second thin shell totally enclosing an inner void with at least a first finite section of said first thin shell being a microporous polymer shell section consisting of a porous membrane having (i) the properties of transporting water vapor at a rate of between about 50 up to about 1000 $g/m^2/day$ at about 25° C. and at about 50% relative humidity at about atmospheric pressure and having an air transport rate of 100–20,000 Gurley seconds; and (ii) a thickness in the range of from about 0.01 mils up to about 20 mils, the said second thin shell having a porosity equal to or less than the porosity of said first finite thin shell, said porous polymer shell section having a porosity such that when said hollow totally enclosed structure is located in an ambient environment at a pressure of less than or equal to about one atmosphere at a point in time substantially immediately or subsequent to the commencement of functional operation of said structure and thereafter, in a controllable time release manner and at a constant rate, said volatile material molecules are transported at a constant mass flow rate both of the individual volatile components and totally, either:

(i) onto the inner surface of said porous polymer shell section via an adsorption mechanism and from the outer surface of said porous polymer shell section to the atmosphere surrounding said structure via a desorption mechanism; and

(ii) through said porous polymer shell section by means of capillary action,

said microporous polymer shell section consisting essentially of a polyolefin intimately admixed with a powder having an average particle diameter of from about 0.3 up to about 500 microns, said powder being a filler material incompatible with said polymer, said powder being in a proportion of about 5 to 100 parts by weight per 100 parts by weight of polymer, the said volatile composition having a volatility at ambient conditions which is higher than the transmissibility of said microporous polymer shell section.

4,614,300

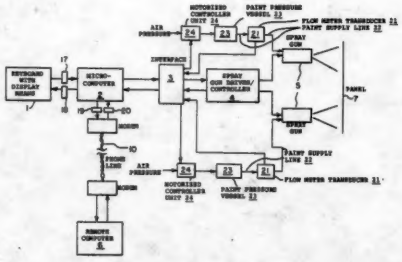
COMPUTERIZED SPRAY MACHINE

Allan F. Falcoff, Lake Orion, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 369,935, Apr. 19, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,726

Int. Cl.[4] B67D *5/08*

U.S. Cl. 239—71 **5 Claims**



1. An improved liquid paint spray machine for standard color panel preparation consisting essentially of a spray gun with an adjustable spray nozzle, said gun attached to a pressure vessel containing paint which feeds paint to the gun, means for controlling the speed and acceleration of the horizontal and vertical movement of the gun, means for controlling the number of passes by the gun, means for controlling the dwell period at the end of each pass and means for controlling the flash

time between coats of paint applied by said gun; wherein the improvement comprises a computer system:

i. having a memory storage means for storing programs for multiple paint spray procedures with specific operating parameters of the spray gun movement and paint flow to the spray gun for such procedures;

ii. coupled to means capable of actuating, monitoring and correcting parameters of movement of the spray gun and paint flow to the spray gun to insure accurate spray application of a paint;

iii. having feedback encoders which supply the computer with data of movement of the spray gun and paint flow to the spray gun so that the computer corrects for any discrepancy between operating parameters of a spray procedure as programmed and the actual parameters being carried out;

iv. coupled to means that control and correct flow of paint to the gun from the pressure vessel containing paint wherein the means to control the flow of paint to the gun comprises a flow meter transducer positioned to monitor the flow of paint to the gun and is connected to the computer system through the feedback encoder and a motorized pressure regulator electrically connected to the computer system and connected to the pressure vessel containing paint, whereby the flow meter transducer monitoring paint flow feeds a signal to the computer system through the feedback encoder and in turn a signal is fed to the motorized pressure regulator to increase or decrease pressure to the pressure vessel to change the flow paint to the gun;

v. having a keyboard with display means; wherein an operator of the spray machine can program spray procedure into the computer system by using a keyboard, with prompting from the computer via the display means.

4,614,301

DEVICE FOR PROPORTIONING AND FEEDING POWDER INTO BARREL OF DETONATION UNIT

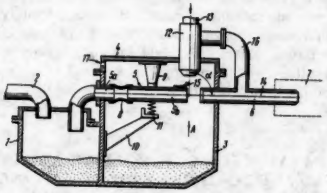
Anatoly I. Zverev, ulitsa Sverdlova, 13, kv. 21, Kiev, U.S.S.R.

Filed Aug. 30, 1984, Ser. No. 645,704

Claims priority, application U.S.S.R., Sep. 2, 1983, 3638347

Int. Cl.[4] B05B *1/24*; F16K *1/00*; B05C *5/04*

U.S. Cl. 239—79 **2 Claims**



1. A device for proportioning and feeding powder into a barrel of a detonation unit, comprising: a powder container; a neutral gas pressure source permanently communicating with said powder container; a bin; a first pipe having a first end and a second end and whose first end is in said powder container and second end is in said bin; a second pipe having a geometrical axis and having a first end and a second end and whose first end communicates with said barrel of said detonation unit, while its second end is in said bin at some distance from the second end of said first pipe; said second ends of said first and second pipes being coaxially arranged during a powder feed cycle, said second end of said first pipe being transversely displaceable from said second end of said second pipe; a duct for supplying a neutral gas into said bin; a nozzle arranged at an end of said neutral gas supply duct in said bin in proximity to said second end of said second pipe, said nozzle having an axis positioned at an angle to the geometrical axis of said second pipe; a branch pipe having a first end and a second end and whose first end is connected to said nozzle, while its second end is connected to said second pipe at some distance from its second end; said first pipe being designed and arranged so that it is acted on by a neutral gas jet exiting from the nozzle and is thus displaced in relation to said second pipe after a predetermined quantity of powder has been fed into a spraying tip of said detonation unit; and a means for bringing said second end of said first pipe into a position coaxial with said second end of said second pipe wherein a member interacting with the neutral gas jet exiting from said nozzle is mounted on said second end of said first pipe.

4,614,302

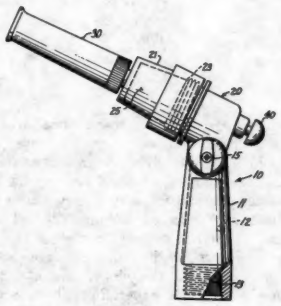
HOSE END NOZZLE WITH SUBSTANCE INJECTOR

J. Linn Rodgers, 9606 La Serna Dr., Whittier, Calif. 90605

Filed Mar. 15, 1985, Ser. No. 712,130

Int. Cl.[4] B05B *11/02*

U.S. Cl. 239—315 **4 Claims**



1. A hose end nozzle assembly comprising a body having a handle having a passage therethrough, with a threaded opening adapted to engage the threads on the end of a hose, said body having an internal mixing chamber, said mixing chamber being in fluid-receiving communication with said passage in said handle;

a discharge nozzle mounted to said body and in fluid-receiving communication with said mixing chamber to discharge water therefrom; and

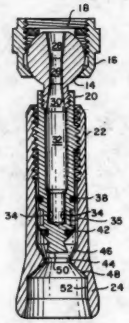
a dispenser having an outlet discharging into said mixing chamber, said dispenser including a cylinder inside said mixing chamber with an internal axial cylindrical wall, a piston in sliding fluid-sealing relationship with said wall, a piston rod connected to said piston and adapted to reciprocate said piston in said cylinder so as to enlarge or reduce the volume of the cylinder between said outlet and said piston, said piston rod projecting beyond said body for engagement by the hand of a user which is also gripping the handle, to move said piston rod and said piston, said dispenser having an aperture opening into said cylinder, and a closure therefore to enable liquid material to be poured into said cylinders and contained therein for expulsion through said aperture by axial movement of said piston, said aperture being on one side of said piston, there being a balance passage from said mixing chamber into said cylinder always opening into said cylinder on the other side of said piston;

said body being formed in two separable mating parts to give access to said mixing chamber and to said dispenser when separated, said dispenser including a removable closure accessible by hand when said parts are separated to enable the dispenser to be supplied with a material to be dispensed.

4,614,303
WATER SAVING SHOWER HEAD

Charles D. Moseley, Jr., P.O. Box 449, Lynchburg, Va. 24505, and Charles D. Waring, 3952 Bosworth Dr. SW., Roanoke, Va. 24014

Filed Jun. 28, 1984, Ser. No. 625,636
Int. Cl.[4] B05B *1/26, 1/30, 1/14*
U.S. Cl. 239—499 **5 Claims**



1. A self-cleaning, water saver shower head which is adjustable between a drip flow condition, a fine spray, a powerful spray and a heavy, pulsating rinse stream comprising:

an elongated, substantially hollow housing having an axial inlet port at one end for admitting water, a plurality of radial outlet ports adjacent the opposite end for expelling water and an interior mixing chamber in communication with the inlet port and the radial outlet ports; first cavitation means disposed at the inlet for inducing cavitation in a stream of water passing therethrough and second cavitation inducing means disposed at the radial outlet ports for inducing cavitation in a stream of water passing therethrough;

a hollow sleeve rotatably mounted on the exterior of said housing surrounding the radial outlet ports, said sleeve including spray diffusing means extending axially outwardly from the ends of said housing adjacent the radial ports for collecting streams of water from said radial ports and dispensing the same in a spray pattern, said sleeve also mounting spray adjustment means disposed between the radial ports and said diffusing means for changing the spray pattern from said diffusing means responsive to rotation of said sleeve about said housing;

said sleeve further comprising an internal throat, an internal converging chamber upstream of the throat, and an internal diverging chamber downstream of the throat, said diverging chamber opening into a diffusing flange which forms the spray outlet of said head, the radial outlet ports of said housing being disposed within said sleeve upstream of the converging chamber;

said spray adjustment means further comprising a frustroconical plunger formed by the end of said housing adjacent the radial outlet ports and disposed downstream of the ports adjacent the throat whereby as said sleeve is rotated on said housing the plunger will move, selectively, into or out of the throat thereby changing the spray pattern therethrough; and

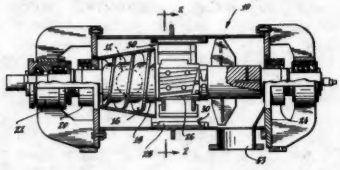
drip constricting means surrounding said housing between the plunger and the radial outlets for engaging the surface of the converging chamber when the plunger is fully received in the throat to constrict the flow of water therethrough to a drip

said drip constriction means comprising a flange extending radially outwardly from said housing, the peripheral surface of said flange defining knurled serrations so that when said flange seals against the converging chamber surface of said sleeve adjacent the throat the flow of water through said shower head will be restricted to a drip.

4,614,304
ROTOR/MIXER FOR CONTROLLING MIXING AND REFINING OF PULP MATERIAL

Rolf Reinhall, and Johan I. Johansson, both of Bellevue, Wash., assignors to Sunds Defibrator AB, Sundsvall, Sweden

Filed Dec. 4, 1984, Ser. No. 677,827
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—28 **8 Claims**



1. Apparatus for mixing and refining pulp material in a refining region defined between a rotor and a surrounding drum as the pulp material is moved through a refining region by the effect of the relative rotational movement between the rotor and the drum, characterized by:

a plurality of mixing/refining elements carried by said rotor and defining a plurality of co-axially extending compression/grinding areas between said rotor and said drum and intermediate decompression areas,

said mixing/refining elements comprising a rotatable grinding surface extending from a leading flank to a trailing flank for working against a facing grinding surface on the interior of said drum;

said rotatable grinding surfaces being designed to comprises the pulp material as it is passed from a feed-in opening defined between said leading flank and said facing grinding surface to an outlet gap defined between said trailing flank and said facing grinding surface and allow the compressed material to be passed into said decompression areas during the rotation of said mixing/refining elements;

said mixing/refining elements being articulately mounted to said rotor to permit variations of the clearance between said rotatable surfaces and said facing grinding surfaces while simultaneously adjusting the material feeding angle of said compression/grinding area.

4,614,305
APPARATUS FOR CONTROLLING AND INDICATING SPEED AND LOAD OF MOBILE CHOPPING MACHINE

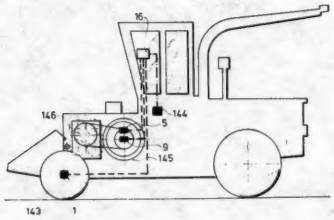
András Fekete, Budapest; László Seres, Gödöllo; István Földesi, and Vazul Rusz, both of Budapest, all of Hungary, assignors to MEM Muszaki Intezet, Tessedik, Hungary

Filed Feb. 21, 1985, Ser. No. 703,826
Claims priority, application Hungary, Feb. 24, 1984, 743/84
Int. Cl.[4] B02C *25/00*
U.S. Cl. 241—36 **4 Claims**

1. An apparatus for indicating and controlling the vehicle speed and working load of a mobile foliage chopping vehicle comprising a chopping machine vehicle having a Diesel-engine, the first output of said engine is connected to a first input of a hydrostatic driver, the second output of said engine being connected to an input of a chopping drum, the second input of the hydrostatic driver is coupled to the output of a transmission changing intervention unit, while the output of said hydrostatic driver is connected to the input of a non-driven wheel, the output of said non-driven wheel is connected to an input of a speed sensor, a first output of the chopping drum is coupled to the input of a chopping drum rotation speed sensor,

an output of said speed sensor is connected to the input of a first signal former, the output of said first signal former is connected to a first input of a first subtractor, while a second input of said first subtractor is connected to the output of a first basic signal former, said first subtractor providing three outputs,

the output of said chopping drum rotation speed sensor is connected to the input of a second signal former, while the output of said second signal former is connected to a first input of a second subtractor, the second input of said second subtractor is coupled to the output of a second basic signal former, said second subtractor also providing three outputs; said three outputs of said first subtractor are respectively connected to a first input of a reverse signal former, a first input of a guided switching system of a compensation signal former and to a first input of a display



means, said three outputs of said second subtractor are connected respectively to the second input of said reverse signal former, the second input of said guided switching system and the second input of said display means,

the first output of said guided switching system is connected to the input of a speed decreasing generator and the second output of said guided switching system is connected to the input of a speed increasing generator,

the output of said speed decreasing generator is coupled to a first input of an intervention signal amplifier and the output of said speed increasing generator is connected to the second input of said intervention signal amplifier;

the output of said intervention signal amplifier is coupled to a first input of said transmission changing intervention unit, and

the output of said reverse signal former provides the second input of said transmission changing intervention unit.

4,614,306

PIVOTING PROTECTOR FOR FOOD PROCESSOR FEED TUBE

Lawrence A. Doggett, Kettering, Ohio, assignor to KitchenAid, Inc., St. Joseph, Mich.

Filed Oct. 10, 1984, Ser. No. 659,381

Int. Cl.[1] B02G *18/16*

U.S. Cl. 241—37.5 **9 Claims**

1. In a food processor having a base containing a drive motor and control means for enabling the operation of said drive motor, a working bowl detachably secured to said base, a shaft projecting upwardly through said bowl and being coupled to said drive motor for rotation of a food processing tool coupled to said shaft within said bowl, and a bowl cover detachably secured to said bowl and defining a feed tube for introducing food items through said bowl cover into said bowl, an improved feed tube protector comprising:

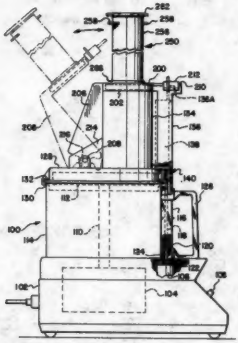
a feed tube cover;

hinge means for hingedly mounting said feed tube cover to said bowl cover for pivotal movement of said feed tube cover between a closed position over said feed tube and an opened position retracted from said feed tube;

a food pusher coupled to said feed tube cover and aligned with said feed tube when said feed tube cover is in said closed position for pushing food through said feed tube;

latch means movable between a released position and a secured position for securing said feed tube cover to said bowl cover; and

interlock means on said bowl cover activated by said latch



means for operating said control means to enable the operation of said drive motor only when said bowl, said bowl cover and said feed tube cover are properly secured to one another and to said base.

4,614,307

APPARATUS FOR THE GRANULATING OF PLASTIC MATERIAL WITH AXIAL ADJUSTMENT OF THE CUTTING HEAD

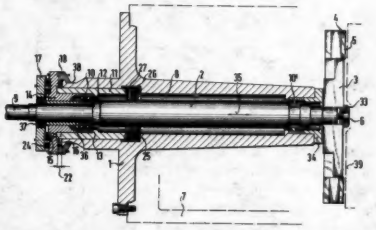
Wolfgang Lauser, Leonberg, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,289

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405978

Int. Cl.[4] B02C *18/18*

U.S. Cl. 241—101.4 **10 Claims**



1. Apparatus for granulating plastic material comprising a housing, a granulating hood connected to said housing in adjacent relation to an extruder of plastic material, a knife shaft including a knife head having cutting knives, said housing having a longitudinal bore, said knife shaft extending in said bore with the knife head opposite the extruder for granulating plastic material coming from the extruder, a bearing sleeve surrounding said shaft and displaceably mounted in said bore for movement longitudinally thereof, bearing means in said sleeve rotatably supporting said knife shaft, connecting means operatively coupling said sleeve, bearing means and said knife shaft for common movement longitudinally in a direction to advance the knife head towards said extruder, a support arm operatively coupled to said connecting means for longitudinally displacing said support arm, drive means for longitudinally displacing said support arm, and a compression spring in said bore in said housing concentrically surrounding said knife

shaft and engaging said sleeve to oppose longitudinal displacement thereof in a direction in which the knife head is advanced towards the extruder, said compression spring and drive means acting in opposite directions axially of said knife shaft and applying net axial force to said shaft through said bearing means to cause the knife head to granulate the plastic material from the extruder.

4,614,308

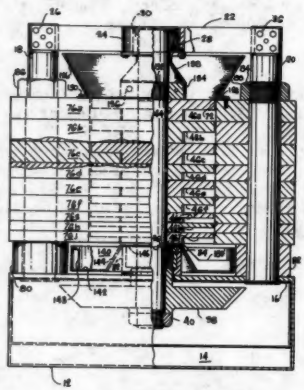
SHEARING MACHINE FOR REDUCING CHUNKS OF RUBBER AND LIKE MATERIAL TO SMALLER PIECES

Randel L. Barclay, 5616 Carpenter Rd., Stockton, Calif. 95205

Continuation-in-part of Ser. No. 545,071, Oct. 24, 1983, abandoned, and a continuation-in-part of Ser. No. 550,919, Nov. 10, 1983, abandoned. This application Jun. 22, 1984, Ser. No. 623,568

Int. Cl.[4] B02C *13/24, 7/04, 23/00*

U.S. Cl. 241—154 **12 Claims**



1. A shearing machine for reducing chunks of tough material, such as rubber, to relatively small size pellets comprising,

a framework defined by a plurality of fixed members,

a plurality of stators mounted on the framework, the stators having openings and a plurality of blades having planar, spaced-apart plates on opposite sides of the blades, extending radially inwardly into said openings toward a central region, the blades having a forward edge with a knife connected thereto,

a central axial shaft extending through the central region of the stators,

a plurality of rotors corresponding in number to the stators, each rotor fitting within the opening of a stator and having a central hub connected to said axial shaft, each rotor having a plurality of blades having planar, spaced-apart plates on opposite sides of the blades extending radially outwardly confronting the blades of the stator, a plate of a stator blade clearing an adjacent plate of a rotor blade in a material shearing relationship, and

motor means in power transfer relation to said central axis shaft for enabling shearing of material at least as tough as chunks of rubber between adjacent rotor and stator blade plates, said motor means rotating said blades at a rate of less than 100 revolutions per minute.

4,614,309

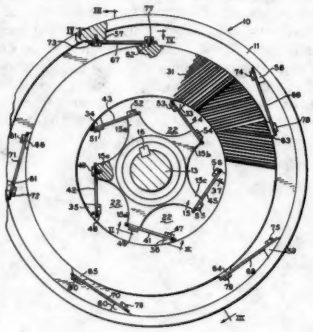
RIGID LINK MULTIPLE DISK REFINER

Philip H. Goldenberg, Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 18, 1984, Ser. No. 651,868

Int. Cl.[4] B02C *7/16*

U.S. Cl. 241—163 **10 Claims**



1. A multiple disk refiner comprising:

a housing,

a hub mounted for rotation within said housing,

a rotor secured to said hub for rotation therewith,

a plurality of spaced annular refiner rotor disks extending in parallel spaced relation coaxially with said hub,

a plurality of spaced refiner stator disks in interleaved relation with said refiner rotor disks and being spaced therefrom to provide passages between confronting refiner rotor and stator disks through which a suspension to be refined can be passed, and

drive means interconnecting said rotor and said rotor disks, said drive means including rigid links, each having one end pivotally secured to said rotor and the other end pivotally secured adjacent the inner periphery of one of said rotor disks, said links being secured to said rotor disks to provide a driving connection between said rotor and said disks while providing sufficient pivotal movement to accommodate slight axial shifting of said rotor disks relative to said stator disks along the rotary axis of said rotor disks.

4,614,310

COMMINUTING APPARATUS WITH FLUID CYLINDER ROTOR AND STATOR BIASING

James J. Tloczynski, Parma, Ohio; Melvin Budzol, Schaumburg, Ill.; Clifford J. Ahola, Cleveland, Ohio, and James C. Rine, Lake City, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 29, 1981, Ser. No. 316,215

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—259.2 **9 Claims**

1. A comminuting apparatus comprising:

a mill housing;

a stator support bracket non-rotatably and longitudinally movably mounted on the mill housing;

a stator mounted non-rotatably in the stator bracket, the stator having a generally peripheral abrasive surface;

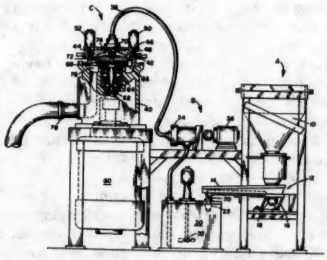
a rotor disposed adjacent the stator to undergo rotation relative thereto, the rotor having a generally peripheral abrasive surface disposed in cooperative relationship with the stator peripheral abrasive surface for defining a grinding zone therebetween;

feeding means for feeding a slurry of pellets and fluid to the grinding zone;

rotating means for rotating the rotor relative to the stator, the rotating means being mounted on the mill housing in

such a manner that the rotor is able to undergo rotational movement relative to the mill housing and is prohibited from undergoing substantial longitudinal movement;

a plurality of fluid cylinders operatively connected betweenw the stator bracket and the mill housing for urging the stator peripheral abrasive surface and the rotor peripheral abrasive surface into intimate physical contact with



the pellets and fluid being the only medium for preventing the rotor and stator abrasive surfaces from grinding one directly against the other; and,

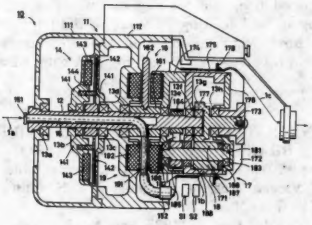
means for maintaining a preselected, constant fluid pressure within each of the fluid cylinders to maintain a preselected, constant force of at least 2000 pounds between the rotor and stator peripheral abrasive surfaces, one against the other, as the abrasive surfaces wear.

4,614,311

YARN STORAGE AND DELIVERY APPARATUS

Shoichiro Kakinaka, Nishinomiya, Japan, assignor to Kasuga Denki Co., Ltd., Osaka, Japan

Filed Jan. 30, 1985, Ser. No. 696,643
Int. Cl.[4] B65H *51/20*
U.S. Cl. 242—47.01 **6 Claims**



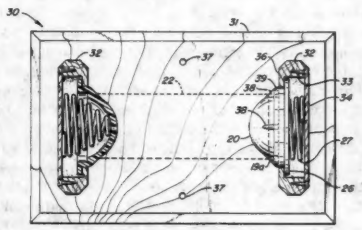
1. A yarn storage and delivery apparatus for storing and delivering a supplied yarn, comprising: a main shaft having a hollow portion, first means supporting said main shaft for rotation about a main axis, a motor for rotatively driving said main shaft, a yarn winding drum having a rotational drum shaft with a drum axis of rotation lying in an extension of said main axis of said main shaft, and second means supporting said drum axis for rotation, a coupling member **(174, 176)** arranged for rotatably bridging said main shaft and said rotational drum shaft of said yarn winding drum and for rotationally coupling said main shaft and said yarn winding drum, a yarn wrapping member driven by said main shaft and having one end extending through said hollow portion of said main shaft and positioned at one end of said main shaft, said yarn wrapping member having another bent end adjacent the other side of said main shaft, whereby said yarn wrapping member is positioned in opposed relation to a portion of an outer periphery of said yarn winding drum so that during rotation of the yarn winding drum a yarn supplied by one end of said yarn wrapping member is wrapped around the yarn winding drum, yarn winding drum reverse rotation drive means supported by said coupling member and responsive to the rotational force of said main shaft for generating a rotational force in a direction opposite to the direction of rotation of said main shaft for transferring said reverse rotational force to said rotational drum shaft, and anchoring means **(191, 192)** for holding said coupling member and said yarn winding drum reverse rotation drive means in a substantially stationary state for preventing said coupling member and said yarn winding drum reverse rotation drive means from being rotated about said main shaft and about said rotational shaft of said yarn winding drum by the rotation of said main shaft or of said yarn winding drum, whereby the winding of yarn takes place by said motor with a speed which is the sum of the rotational speed of the yarn winding drum in one direction and the rotational speed of said wrapping member in the other direction.

4,614,312

ROLL PAPER HOLDER

Herman D. Del Pino, 322 Prospect Dr., San Rafael, Calif. 94901

Filed Aug. 20, 1984, Ser. No. 642,398
Int. Cl.[4] B65H *16/06, 19/00*
U.S. Cl. 242—55.2 **3 Claims**



1. A roll paper holder, comprising:

a base with means for connection to a wall;

a pair of opposed side panels associated with the base, each said panel extending forwardly of the base and having an opening therein, a retractable plunger extending partially through the opening and confined against escaping therefrom and including a generally hemispherical portion, a concentric ring portion spaced radially outwardly from said hemispherical portion and angularly spaced struts connecting the hemispherical and ring portions together, so that when said hemispherical portions project from the openings they are in position to engage the ends of a paper roll, the two generally hemispherical portions being spaced apart less than the length of a paper roll to be held; and

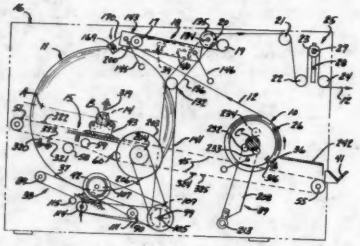
a compression coil spring in each side panel, engaging the plunger and urging it toward the opposite plunger, and a back plate on the side panel against which the spring bears;

whereby the plungers with their generally hemispherical and concentric ring portions retract into the side panels when a roll of paper is pushed between them, and then partially return to engage and hold the roll with at least the hemispherical portions extending into the open ends of the roll, and said spaced apart struts being adapted to hold paper rolls having a slightly larger diameter than standard sized rolls.

4,614,313
APPARATUS FOR CONTINUOUSLY SUPPLYING A WEB OF SHEET MATERIAL

John F. Keene, Roscoe; Bengt L. Kuller, Rockford, and Robert G. Kemmeter, Rockton, all of Ill., assignors to Enkel Corporation, Rockford, Ill.

Division of Ser. No. 555,823, Nov. 28, 1983, Pat. No. 4,564,150.
This application Nov. 19, 1985, Ser. No. 799,477
Int. Cl.[4] B65H *19/30, 23/08*
U.S. Cl. 242—58.6 8 Claims

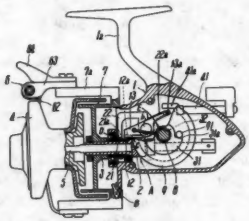


1. In an apparatus for continuously supplying a web of sheet material, the combination of, a base, a carrier on said base for supporting a roll of web and for advancing the roll from a first station to a second station, said carrier supporting said roll for rotation about the axis of the roll, means for guiding said web as the latter is unwound from said roll and operable to guide the web when the roll is in each of said stations and when the roll is being advanced from said first station to said second station, a movable member in frictional driving engagement with the periphery of said roll when the latter is in said first station and driven by the roll as said web is unwound, means supporting said member on said base for movement with the advance of said roll and maintaining said member in frictional engagement with the roll as the roll is advanced to said second station, a brake mounted on said base and operable when energized to apply a braking force to said member and thus to said web, mechanism connecting said brake to said member in all positions of the latter, and means responsive to the tension of said web and operable to control the energization of said brake thereby to continuously control the tension as the roll is advanced to said second station.

4,614,314
SPINNING REEL

Masuo Ban, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 27, 1984, Ser. No. 635,184
Claims priority, application Japan, Jul. 27, 1983, 58-138087; Oct. 18, 1983, 58-161435[U]
Int. Cl.[4] A01K *89/01*
U.S. Cl. 242—84.2 G 2 Claims



1. A spinning reel, comprising:
a rotary frame having a fishing line retainer comprising a bail arm reciprocally swingable between a line winding position and a line releasing position,
an inversion lever for swinging said bail arm from said line winding position to said line releasing position,
a drive mechanism for driving said rotary frame to rotate forwardly or in reverse,
a spool for winding-up thereon a fishing line when said rotary frame is rotated forwardly,
a first anti-reverse-rotation mechanism including a plurality of teeth, for restraining said rotary frame from reverse rotation,
a second anti-reverse-rotation mechanism having one tooth, for stopping said rotary frame in a position where said bail arm is adapted to be swung by operation of said inversion lever by using an angler's hand gripping a rod on which said reel is mounted from the line winding position to the line releasing position when said rotary frame is driven to reversely rotate,
a switching means having an operating member, for switching said first and second anti-reverse-rotation mechanisms between an operating position and a non-operating position, and a release mechanism, responsive to said drive mechanism driving said rotary frame to rotate in reverse, for releasing said first anti-reverse-rotation mechanism from its function of restraining reverse rotation of said rotary frame, wherein said drive mechanism includes a drive shaft, said drive shaft supports said rotary frame rotatably, said first anti-reverse-rotation mechanism has a first gear having said plurality of teeth and a first anti-reverse-rotation pawl engageable with one of said teeth at said first gear, said second anti-reverse-rotation mechanism has a second gear having said one tooth and a second anti-reverse-rotation pawl engageable with said one tooth, said first gear being supported rotatably with respect to said drive shaft, said second gear being supported non-rotatably with respect to said rotary frame, and a locking means is disposed between said first gear and said rotary frame for locking said first gear, said rotary frame and said drive shaft with each other when said drive mechanism rotates said drive shaft forwardly and when said rotary frame rotates in reverse due to a pull of the fishing line by a hooked fish, said locking means including means for releasing said locking between said first gear and said drive shaft when said drive mechanism rotates said drive shaft in reverse, thereby driving said rotary frame only.

4,614,315
MAGNETIC-TAPE APPARATUS WITH IMPROVED BRAKE-TYPE TENSION CONTROL

Wilhelmus P. M. Gerrits, Eindhoven, Netherlands, and Alois Huber, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,753
Claims priority, application Netherlands, Nov. 14, 1984, 8403472
Int. Cl.[4] G03B *1/04;* G11B *15/32*
U.S. Cl. 242—200 10 Claims

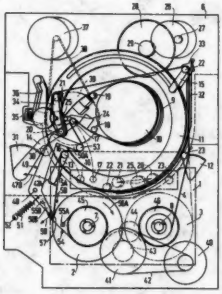
1. A tape recorder including:
a chassis,
first and second reel supports mounted to the chassis for rotation about respective axes, for supporting respective reels between which a length of magnetic tape extends, portions of the tape being wound around at least one of the reels,
means for transporting said tape between the reels in a first transport direction and in an opposite second transport direction, and
a tension control device for controlling the tension in the part of the tape extending between the reels, said device comprising:
a braking disc mounted on one of said reel supports for rotation therewith, and having a circumference concentric with the respective support axis,

a sensing lever having a first end and a second end, mounted for pivoting about a lever pivoting axis in a first pivoting direction and in an opposite second pivoting direction,

resilient means arranged to act on said lever for urging it in said first pivoting direction,

tape contact means connected to said lever near said first end, arranged such that when a tape is present said contact means contacts said part of the tape extending between the reels, and

an elongate flexible braking member arranged to surround at least a part of said circumference in contact therewith, and having first and second ends; said first end being secured



to a recorder part other than said lever; said sensing lever cooperating with said braking member to produce a tensile force in the braking member responsive to the pivoted position of the lever, thereby influencing the braking torque resulting from contact pressure of the member on the disc so as to control the tension in said part of the tape,

characterized in that the second end of the braking member is secured to another part of the recorder other than said lever, and

said lever cooperates with said member at a location between the braking disc and an end of the member, by exerting a force on said member perpendicular to the direction of member elongation at said location.

4,614,316

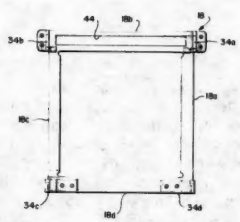
STOWABLE SLIDING FILTER

David J. Marvin, Wallingford, and Walter F. Darges, Wayne, both of Pa., assignors to The Boeing Company

Filed Oct. 25, 1984, Ser. No. 664,650

Int. Cl.[4] B64D *43/00*; B62D *25/14*; G01D *11/28*

U.S. Cl. 244—1 R **8 Claims**



1. An IR filter assembly for use with a lighted instrument panel mounted to a control panel, comprising:

a support frame mounted to the control panel and about the periphery of the lighted instrument panel, such that the lighted instrument panel is visible through said support frame;

an IR filter panel;

an IR filter panel mounting bracket to which said IR filter panel is mounted, said mounting bracket being supported on said support frame; and

a stowing bracket mounted to the control panel perpendicularly to the mounting of the support frame, said support frame including a slot which provides access to said stowing bracket so that the IR filter and its mounting bracket can be displaced from a position in which the filter is supported to be substantially parallel with the lighted instrument panel, into a position in which the filter and its mounting bracket are received within the stowing bracket.

4,614,317

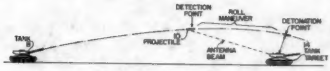
SENSOR FOR ANTI-TANK PROJECTILE

Gus Stavis, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jun. 7, 1985, Ser. No. 742,661

Int. Cl.[4] F42B *15/02*; G01S *9/22*

U.S. Cl. 244—3.19 **12 Claims**



1. A weapon control system comprising:

a projectile having an electronics storage space therein;

signal processing means located in the storage space;

means located in the storage space for transmitting a radar interference beam pattern toward the ground in order to detect a target;

means located in the storage space for receiving ground reflections in response to the transmitted beam;

movement of the interference beam across a target causing the receiving means to detect modulation of the interference pattern;

the processing means processing the modulation detected by the receiving means, indicative of a target, and adjusting the roll position of the projectile to a preselected orientation and;

a ballistic body stored within the storage area and oriented in confronting vertical relationship to the target when the position of the projectile assumes the preselected orientation so that the ballistic body may be fired to intercept the target.

4,614,318

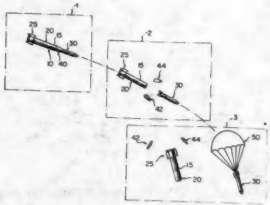
PASSIVE SEPARATION DEVICE AND METHOD FOR FINNED BOOSTER

Gerald W. Gobel, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 17, 1984, Ser. No. 631,808

Int. Cl.[4] F42B *15/02*

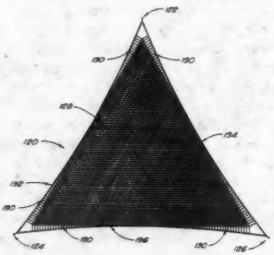
U.S. Cl. 244—3.21 **10 Claims**



1. An apparatus for separating a first segment and a finned second segment of an object in flight comprising:

means for generating yaw maneuver command signals effective for controlling the position of the fins to guide said second segment away from said first segment upon separation thereof;
means for generating a time delay signal;
means for generating a separation signal immediately prior to separation of said first and second segments;
means connected to the yaw maneuver command signal generating means for storing the yaw maneuver command signals and producing a stored signal;
means for controlling the positions of the fins in response to said stored yaw maneuver command signals; and
time delay means connected to the time delay signal generating means and the separation signal generating means and responsive to the time delay signal and the separation signal for connecting the storing means to the controlling means after a time delay corresponding to the time delay signal, the delay commencing upon receipt of the separation signal by said time delay means.

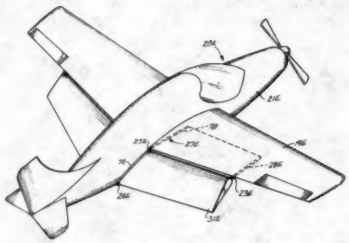
4,614,319
SOLAR SAIL
Kim E. Drexler, 86 Renato Ct. #10, Redwood City, Calif. 94061
Filed May 5, 1980, Ser. No. 146,700
Int. Cl.[4] B64G *1/40, 1/42*
U.S. Cl. 244—172 **2 Claims**



1. A solar sail propulsion system comprising:
solar sail means for intercepting light pressure to produce thrust, said solar sail means being a thin metal film;
tension truss means having two ends attached at one end to said solar sail means for transferring said thrust from said solar sail and for preventing gross deformation of said solar sail under light pressure, said solar sail means being a plurality of separate generally two-dimensional pieces joined by springs to said tension truss means;
a payload attached to the other end of said tension truss means, said tension truss means comprising a plurality of attachment means for attaching shroud lines to the top of said tension truss means and a plurality of said shroud lines attached to said attachment means at one of their ends and said payload at the other;
a plurality of reel means attached to said shroud lines for controllably varying the length of said lines; and
a plurality of reflective panel means attached to said sail means for controlling the orientation of said system.

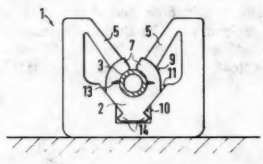
4,614,320
AIRCRAFT WING FLAP
Elbert L. Rutan, 39820 Golfers Dr., Palmdale, Calif. 93551
Filed Mar. 27, 1984, Ser. No. 593,943
Int. Cl.[4] B64C *9/18*
U.S. Cl. 244—216 **17 Claims**

1. A lift-augmentation system for an aircraft wing, comprising:
a lift-augmentation device of generally quadrilateral planform to define four corners;
first and second tracks on the aircraft for supporting the device to be movable between extended and retracted positions on the wing, the device having a first spanwise edge which is remote from the wing and a second spanwise edge which is adjacent the wing when the device is in the extended position;
first and second couplers disposed at diagonally opposite corners of the device and connecting such corners to the first and second tracks respectively, the first and second



couplers providing vertical and lateral support for the device at such corners;
a third coupler disposed at the remaining corner of the second edge of the device, the third coupler providing vertical support and at least limited lateral freedom for the device, the remaining corner of the first edge of the device being unsupported; and
drive means connected between the aircraft and device for extending and retracting the device along the tracks.

4,614,321
PIPE CLIP
Guy Andre, Seyssinet-Pariset, France, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany
Filed Apr. 29, 1985, Ser. No. 728,273
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1984, 3416020
Int. Cl.[4] F16L *3/08*
U.S. Cl. 248—74.2 **2 Claims**



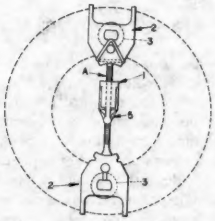
1. A clip for a pipe comprising a flexible, yet relatively stiff U-shaped holder having two upwardly extending sidewalls forming an open top with each sidewall having an arm at its upper end that points obliquely down toward the center of the U-shaped holder and an auxiliary holder open at the top and of relatively softer elastic material, said auxiliary holder also being U-shaped and having two upwardly extending side walls and being adapted to receive the pipe and be pressed into the open top of the U-shaped holder where it is held in place by the arms of the U-shaped holder and closed about a major portion of the periphery of the pipe, said auxiliary holder having two projections extending outwardly from the lower part of its base that initially engage behind the arms of the U-shaped holder to hold the auxiliary holder with its top open in position for receipt of the pipe, said arms being pressed apart by the auxiliary holder as it is pressed into place and which arms thereafter snap back and rest against the closed side walls of

the auxiliary holder after it has been completely pressed into the U-shaped holder to hold it in place.

4,614,322
STRAPPING AND HANGING DEVICE

George E. Goetz, 5822 Elwynn Dr., Milford, Ohio 45150

Filed Oct. 5, 1984, Ser. No. 657,976
Int. Cl.[4] A47G *1/16*
U.S. Cl. 248—490 **7 Claims**

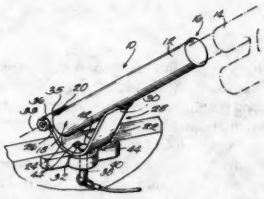


1. A hanging device for an object comprising:
a toothed strap with attachment means at one end;
a clasping strap with attachment means at one end thereof and means for clasping said toothed strap at the other end;
at least two identical hook elements, each including means for engaging said toothed strap attachment means and said clasping strap attachment means; and
at least two cushion buttons adapted to be attached to each of said hook elements, said buttons having means to contact said object to hold said hook elements snugly against the object, and having means for preventing disengagement of said attachment means from said hook elements.

4,614,323
FISHING ROD HOLDER

Jeffrey J. Bauer, 1077 Longfellow Dr., Oconomowoc, Wis. 53066

Filed May 1, 1985, Ser. No. 729,524
Int. Cl.[4] F16M *13/00*
U.S. Cl. 248—515 **6 Claims**

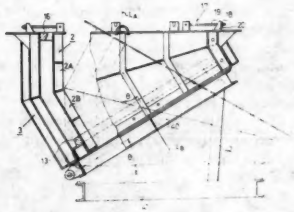


1. A fishing rod holder comprising
an elongated tubular member for receiving the end of a fishing rod, said tubular member including an open front end and a rear end;
a bracket having a rear end, an upturned front end including a support portion located above said rear end and adapted to engage said tubular member at a location intermediate said rear and front ends thereof, and an elongated base portion located between and below said rear end and said support portion;
means connecting said rear of said tubular member to said rear end of said bracket for pivotal movement of said tubular member through a generally vertical plane and about an axis rearwardly of the rear end of said tubular member and above the longitudinal axis of tubular member between a forwardly inclined resting position engaging said support portion of said bracket front end and a raised position; and
securing means for removably securing said bracket base portion on a support.

4,614,324
MOLD FOR PRODUCING CONCRETE PIPE

Kiichi Yamashita, Chiba; Junpei Tanizawa, Zushi, and Takao Iwasaki, Kawasaki, all of Japan, assignors to Nippon Pressed Concrete Co., Ltd. and Nippon Zenith Pipe Co., Ltd., both of Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,208
Claims priority, application Japan, May 7, 1983, 58-79670; May 7, 1983, 58-79671; May 7, 1983, 58-79672; Feb. 10, 1984, 59-23376
Int. Cl.[4] B28B *21/88*
U.S. Cl. 249—11 **2 Claims**

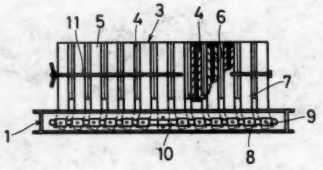


1. A two-piece mitred mold for producing a concrete pipe elbow, each piece comprising: an outer face normal to its longitudinal axis and an inner face inclined to its longitudinal axis; a two-member outer part and a four-member inner part, said outer part including a member defining the bottom of the outer part and a unitary upper member defining the sides and top of the outer part, said parts being rigidly secured one to the other; said inner part including a top member; a pair of L-shaped side members having vertical leg portions defining the sides of the inner part, and lower horizontal leg portions directed inwardly toward each other and spaced apart to partially define the bottom of the inner part; a bottom member adapted to be removably wedged between the inwardly directed horizontal legs of said L-shaped side members; the upper ends of said L-shaped members being flexibly secured to the opposite ends of said top member; quick release clamp means secured to the opposite ends of one of said parts for releasable attachment to the other of said parts; said clamp means being adapted to rigidly space said inner part from said outer part to define therebetween the configuration of the concrete pipe to be molded by said mold, and end plates to contain the concrete between said inner and outer parts while hardening, said inner faces of said pieces being adapted to interface to form said two-piece mitred mold; a base secured to the outer face of one of said pieces; a horizontal support pivotally secured to said base; means to pivot said base to an inclined position to vertically align the axis of said one of said pieces; and means to pivot said base to a horizontal position to vertically align the axis of the other of said pieces, whereby said concrete pipe is poured when said one of said pieces is in the inclined position and whereby said inner parts are thereafter removable from said outer parts by releasing said clamps, removing said bottom members from between said L-shaped side members and flexing said L-shaped members inwardly.

4,614,325
APPARATUS FOR MOLDING PANELS, PARTICULARLY OF CEMENTITIOUS MATERIAL

Hendrikus Muldery, 25 Lennox Street, Union Extension 1; Frank V. van der Struys, both of Germiston, and Heinz Schubert, Alberton, all of South Africa, assignors to Henrikus Muldery, Germiston, South Africa

Filed Nov. 27, 1981, Ser. No. 325,376
Int. Cl.[4] B28B *7/04, 7/24*
U.S. Cl. 249—120 **6 Claims**

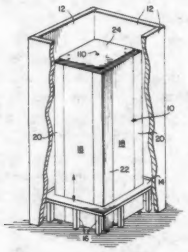


1. In a mold assembly for molding a plurality of panels comprising at least three mold members supported on a generally horizontal frame and extending generally upwardly thereof, each of said mold members being cooperable with adjacent mold members to define mold cavities, at least two of said mold members being pivotally connected to carriers on said frame at locations below said mold cavities for movement about substantially parallel, horizontal pivotal axes from a closed operative position whereby panels can be molded in said cavities, to an open position whereby molded panels can be removed from said mold cavities; the improvement wherein said carriers are adjustable on said frame horizontally relative to each other to vary the spacing between the pivotal axes of said mold members.

4,614,326
CONCRETE MOLD CORE ASSEMBLY

James K. Strickland, and H. Grady Ivey, both of Jacksonville, Fla., assignors to Strickland Systems, Inc., Jacksonville, Fla.

Filed Jan. 9, 1985, Ser. No. 690,046
Int. Cl.[4] B28B *7/30*
U.S. Cl. 249—180 **5 Claims**



1. A concrete mold assembly for casting catch basins and the like comprising:

outwardly facing form panels providing external casting faces, said panels being disposed to form a box with adjoining edges of said panels at diametrically opposite corners of said box being spaced, said spaced edges being provided with opposed guide surfaces each of which is disposed at an acute angle relative to the adjacent casting face;

an elongate corner member disposed between said adjoining edges of said form panels providing an external casting face bridging the space between said adjoining edges, said member having opposite side surfaces defining a tapered wedge on said corner member, said side surfaces matingly and slidably interengaging with said guide surfaces of said form panels;

means connecting said side surfaces to said guide surfaces to maintain sliding interengagement between said surfaces during relative movement between said corner member and said form panels;

means for moving the corner members inwardly from said diametrically opposite corners to collapse said core asembly and outwardly to expand said core assembly into its casting condition;

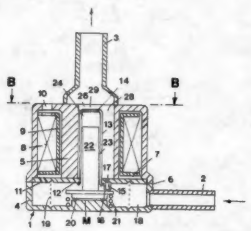
a lid overlying the ends of said form panels and said corner members;

means positively coupling said lid to the upper ends of said corner members whereby said lid is raised when said members are moved outwardly and positively lowered when said members are moved inwardly, said coupling means including cam means for raising and lowering the lid, said cam means comprising a first cam surface carried on the underside of the lid, and second cam surfaces mating with said first cam surface carried by the upper ends of said corner members and said form panels, respectively.

4,614,327
VALVE FOR VOLATILE LIQUIDS, PARTICULARLY EXPANSION VALVE FOR REFRIGERATION PLANTS

Knud V. Valbjorn, Nordborg, and Poul O. Meldgaard, Fynshav, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Oct. 28, 1985, Ser. No. 791,751
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1984, 3441251
Int. Cl.[4] F16K *31/06;* **F25B** *41/04*
U.S. Cl. 251—129.16 **2 Claims**



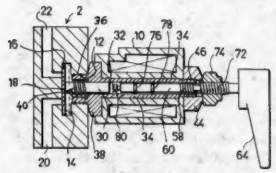
1. A valve for volatile liquids such as an expansion valve for refrigeration plants, comprising, a magnetic coil, a member forming a central opening with outlet means at one end of said opening and an inlet chamber at the other end of said opening, partition means between said inlet chamber and said opening, said housing forming a support for said magnetic coil which is mounted thereon in surrounding relation to said opening, a plunger in said central opening actuateable by said coil and having a closure member disposed in said inlet chamber, cylinder means in surrounding relation to said plunger opening into said inlet chamber and having a closed end opposite said closure member, said cylinder means forming a damping chamber for damping the movement of said closure member, fluid flow passage means providing a flow path from said inlet chamber to said outlet means including a throttle passage in said partition means and an intermediate path section bounded by said cylinder means and said central opening, the flow in said intermediate path section being downstream of said throttle passage where a cooling vaporization occurs, said cooling vaporization in contact with said cylinder means being effective to minimize vaporization in said damping chamber which would otherwise reduce the effectiveness of said damping chamber.

4,614,328

RECIPROCATABLE-PLUNGER TYPE CONTROL VALVE

Zvi Zeadman; Carol Goldenberg, and Zvi Grinboum, all of Kfar-Saba, Israel, assignors to M.A.L. Industrial Automation Systems Ltd., Kfar Sava, Israel

Filed Nov. 13, 1984, Ser. No. 670,467
Claims priority, application Israel, Nov. 11, 1983, 70201
Int. Cl.[4] F16K *31/06, 7/12*
U.S. Cl. 251—129.17 20 Claims



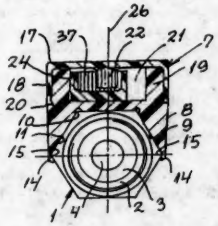
1. A control valve for controlling the flow of a fluid, comprising: a housing having an inlet port, an outlet port, and a passageway therebetween; and a valve assembly disposed within said housing and including a valve member movable to open and closed positions with respect to said passageway; said valve assembly further including a plunger reciprocatable within said housing to an extended position wherein one end of the plunger engages said valve member causing said valve member to close said passageway, or to a retracted position permitting said valve member to open said passageway; a coiled spring enclosing said plunger, and having one end secured to said plunger and the opposite end secured to said housing for urging said plunger to one of said positions; and actuator for actuating said plunger to the other of said positions; and a presettable plastic limit member presettable within said housing to be engaged by the end of the plunger opposite to that engageable with the valve member to fix the retracted position of the plunger, and thereby to preset the magnitude of reciprocatory movement of the plunger and the cross-section area of said passageway when the valve member is in its open position.

4,614,329

COCK OR VALVE COMPRISING A GEAR WHEEL TRANSMISSION

Anders Hansen, Husby, and Bjarne Jepsen, Assens, both of Denmark, assignors to Broen Armatur A/S, Assens, Denmark

PCT No. PCT/DK84/00008, § 371 Date Sep. 28, 1984, § 102(e) Date Sep. 28, 1984, PCT Pub. No. WO84/02966, PCT Pub. Date Aug. 2, 1984
PCT Filed Jan. 31, 1984, Ser. No. 662,428
Claims priority, application Denmark, Jan. 31, 1983, 377/83
Int. Cl.[4] F16K *31/54*
U.S. Cl. 251—248 6 Claims



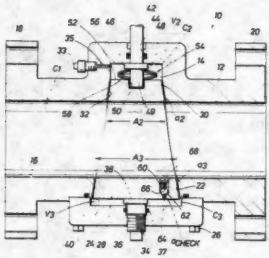
1. A fluid flow-control valve which comprises
a valve housing having a fluid flow passageway therethrough, said passageway defining a central axis,
a rotatable plug movably positioned in said fluid flow passageway to control the flow of fluid therethrough, said plug including a stem which is rotatable around a first axis line that is perpendicular to said central axis, and
a control device for controlling the movement of said plug within said passageway, said control device comprising
a housing element which is snap attached to said valve housing, said housing element providing a recess therein, said first axis line extending through said recess and said recess being defined by a curved wall and a wall portion, said curved wall representing an arc of a circle whose center is along said first axis line and said wall portion extending as a chord to said curved wall,
a handle which is rotatably mounted to said housing element, said handle including a central gear wheel which extends into said recess and rotates about a second axis line, said second axis line being parallel to said first axis line, and
a gear wheel sector located in said recess and connected to said stem, said gear wheel sector being rotatable about said first axis line, said gear wheel sector including an arcuate groove in which said gear wheel is positioned and including teeth extending inwardly of said arcuate groove to engage with said gear wheel.

4,614,330

NON-LOCKING TAPERED PLUG VALVE

Manmohan S. Kalsi, and Clemens L. Horst, both of Houston, Tex., assignors to Empresas Lanzagorta, S.A. de C.V., co

Filed Sep. 9, 1985, Ser. No. 774,145
Int. Cl.[4] F16K *5/02, 5/16*
U.S. Cl. 251—283 16 Claims



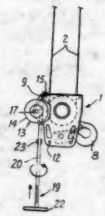
1. A non-pressure-locking tapered plug valve comprising:
(a) a valve body forming a tapered valve chamber and flow passage means in communication with said valve chamber;
(b) a tapered plug member defining a first axial extremity and a second axial extremity smaller than said first axial extremity, said tapered plug member being rotatably positioned within said valve chamber and forming a flow port communicating with said flow passage means in the open position thereof and forming a blocking portion blocking flow through said flow passage means in the closed position of said plug member, said tapered plug member cooperating with said valve body to define a first chamber at one end of said plug member and a second chamber at the opposite end of said plug member;
(c) means controlling the rate of pressure equalization within said first and second chambers such that said first chamber is equalized with line pressure at a faster rate than said second chamber during a negative line pressure transient and said second chamber pressure is equalized with line pressure at a faster rate than said first chamber during a positive line pressure transient; and
(d) means for imparting rotational movement to said tapered plug member about the longitudinal axis thereof for opening and closing said valve.

4,614,331

LIFTING PULLEY BLOCK

Francois Simon, Route d'Annecy, 73410 Albens, France

Filed Dec. 4, 1984, Ser. No. 677,915
Int. Cl.[4] B66D *3/02*
U.S. Cl. 254—390 **6 Claims**



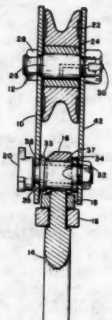
1. In a lifting and hauling unit, the combination of a pulley block suspended by a lifting and hauling cable from a boom, a wheeled carriage secured to said pulley block for rolling said pulley block on the ground when in a lowered position, and a removable drawbar being removably secured to said pulley block and extending substantially downwardly from said pulley block when said pulley block is raised from the ground and suspended from said boom, said drawbar comprising a free end portion which, upon contact with the ground, causes said pulley block and said carriage secured thereto to tip until the carriage wheels contact the ground, said free end portion also forming a carriage handle for towing said pulley block on the ground.

4,614,332

SNATCH BLOCK WITH IMPROVED HOOK BOLT ASSEMBLY

Earl E. Wilson, Claremore, Okla., assignor to The Crosby Group, Inc., Tulsa, Okla.

Filed Jan. 22, 1985, Ser. No. 693,593
Int. Cl.[4] B66C *1/14*; B66D *3/04*
U.S. Cl. 254—405 **8 Claims**



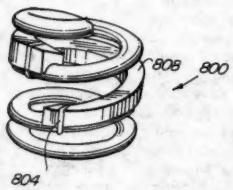
1. A snatch block comprising:
a first side plate having a first hole therein;
a swing plate having a second hole therein;
sheave supporting means positioned between said side plates, said swing plate being pivotable about said supporting means;
a bolt insertable through said holes for holding said side plates;
a spool member attached to said first side plate and having a hole therethrough whose diameter is slightly larger than the diameter of said first hole, the top of said first hole and the top of the hole in said spool member and the top of said second hole being aligned;
retaining means to retain said bolt within said first hole;
the bolt being of uniform diameter for a length at least about that of the length of the hole in said spool member so that the bolt is in full length contact with the spool member when assembled.

4,614,333

DEVICES FOR AUTOMOTIVE VEHICLE COIL SPRINGS

James K. Gaylord, 3500 E. Lincoln Dr., Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 505,930, Jun. 20, 1983, which is a continuation-in-part of Ser. No. 168,449, Jul. 10, 1980, abandoned. This application Aug. 16, 1985, Ser. No. 766,250
Int. Cl.[4] F16F *3/10*
U.S. Cl. 267—61 S **16 Claims**



1. In combination with a coil spring of a vehicle suspension system, a device comprising a resilient body mounted between two adjacent convolutions of said spring for engaging said convolutions upon compression of said spring to increase the resistance of said spring to further compression and thereby stiffen the vehicle suspension system, including means for mounting one side of said body on one of said convolutions so that an opposite side of said body is toward, but spaced from, the other convolution for limited amounts of spring compression, wherein said body is helical and said opposite side of said body defines a surface which is progressively tapered along the length of said body from one end of said body to the other, so that said body has a progressively decreasing thickness between said convolutions from said one end to said other, said surface also being progressively tapered in the lateral direction radially of a center axis of said helical body and along the entirety of said length of said body, so that said body also has a progressively decreasing thickness between said convolutions from its radially outermost to its radially innermost side, whereby upon compression of said spring said device progressively increases the resistance of said spring to further compression and exerts forces on said spring which resist lateral bowing of said spring and tend to constrain said spring for compression along an axial path.

4,614,334

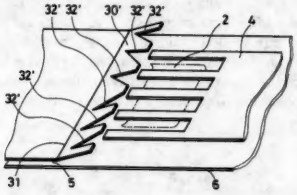
SHEET INSERTING GUIDE

Kojiro Henmi, and Eiji Miyasaka, both of Hikone, Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 5, 1984, Ser. No. 668,348
Claims priority, application Japan, Feb. 8, 1984, 59-17007[U]
Int. Cl.[4] B65H *5/38*
U.S. Cl. 271—8.1 **1 Claim**

1. A sheet inserting guide for engaging a flexible sheet material with sheet transfer means comprising:
a base plate;
a restriction plate positioned above the base plate to define a

sheet insertion port between the base plate and restriction plate at an end adjacent to the sheet transfer means, said plate having a portion defining at least a pair of inwardly tapered side edges bent outwardly at an angle relative to



the base plate with the remainder of the restriction plate extending parallel to the base plate, a plurality of pairs of the tapered side edges being positioned symmetrically at the end of the restriction plate oriented away from the sheet insertion port.

4,614,335

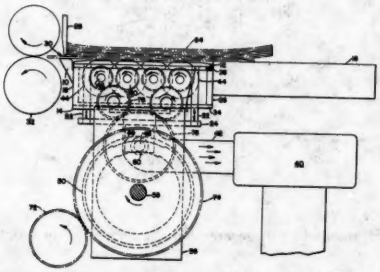
INTERMITTENTLY PROTRUDING FEEDER FOR PAPERBOARD BLANKS

Louis M. Sardella, Towson, Md., assignor to Wm. C. Staley Machinery Corporation, Hunt Valley, Md.

Continuation of Ser. No. 144,129, Apr. 28, 1980, abandoned. This application Nov. 9, 1983, Ser. No. 550,285

Int. Cl.[4] B65H *3/64, 3/12*

U.S. Cl. 271—112 **11 Claims**



1. Apparatus for feeding corrugated blanks one by one from the bottom of a stack of blanks without slippage and so that the leading edge of the blank being fed always enters the nip of nip rolls at the same point in the machine cycle with precision suitable for printing and slotting, said apparatus comprising

a. nip rolls adapted to be operated with a surface velocity;

b. stack supporting structure including a forward portion, and gate means positioned above the stack supporting structure to define an opening which is upstream of the nip rolls;

c. transport means supported under said forward portion of said stack supporting structure, said transport means comprising continuous high coefficient of friction surface adapted to be circulated to feed the lowermost blank through said opening just to said nip rolls;

d. reciprocating means for changing the relative vertical relationship of said high coefficient of friction surface and said forward portion of said stack supporting structure so as to alternately provide an active position where said high coefficient of friction surface extends above the top of said stack supporting structure forward portion and a passive position where said high coefficient of friction surface does not extend above the top of said stack supporting structure forward portion;

e. suction means for urging a blank downwardly into surface-to-surface static friction engagement with protruding continuous high coefficient of friction surface when the latter is in the active position;

f. transmission means comprising input shaft means which is adapted to be rotated and output shaft means which is adapted to be rotated, said input and output shaft means being operatively connected so that the output shaft means undergoes controlled acceleration during an initial period of each revolution of said input shaft means once said friction surface is stationary and in said active position with a blank resting on transport means friction surface and is stationary during a last portion of each revolution of said input shaft means;

g. means operatively connecting the output shaft means of the transmission means and the transport means so that during the operation of the apparatus said high coefficient of friction surface is circulated and undergoes controlled acceleration only after a blank is resting thereon followed by net deceleration only after the nip rolls receive the blank followed by a dwell period during which said high coefficient of friction surface is stationary;

h. the apparatus being such that the active position is effected to bring the non-circulating continuous high coefficient of friction surface into engagement with the lowermost blank directly before said high coefficient of friction surface undergoes controlled acceleration, and the passive position is effected to disengage the high coefficient of friction surface and the blank at the conclusion of the controlled acceleration once the nip rolls have received the blank;

i. the elements (c), (f) and (g) being such that a blank being fed is accelerated to enter the nip rolls at the same velocity as the surface velocity of the nip rolls;

whereby high coefficient of friction surface of said transport means engages and grips the lowermost blank by static friction and alone moves and accelerates that blank to the nip rolls without slippage occurring and so that each blank enters the nip rolls in register whereupon the blank is disengaged from the transport means.

4,614,336

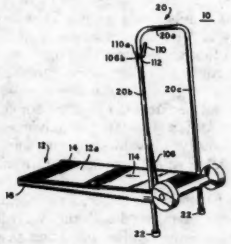
PASSIVE-TYPE TREADMILL

Charles M. Taitel, 35 Union Rd., Parsippany, N.J. 07054

Division of Ser. No. 517,079, Jul. 25, 1983, Pat. No. 4,544,152. This application Jan. 25, 1985, Ser. No. 695,057

Int. Cl.[4] A63B *23/06*

U.S. Cl. 272—69 **4 Claims**



1. A treadmill assembly comprising a pair of elongated rails arranged in spaced parallel fashion;

each of said rails having a hollow roller shaft support section projecting inwardly toward the opposite rails and having sidewalls facing one another, each of said sections having a hollow interior;

said sidewalls being joined to their associated rails by top and bottom sides;

a plurality of slots being formed in the bottom sides and the bottom portions of the facing sidewalls of said sections and extending upwardly and having their upper ends below the top ends of said sidewalls, said slots being arranged at regularly-spaced intervals;

a treadmill belt;

a plurality of rollers for rollingly supporting the treadmill belt and having shaft portions at each end thereof inserted into an associated one of said slots of each of said rails, so that the free ends of said shafts extend into the hollow interior of said support sections, said treadmill belt encircling said rollers;

an elongated rod for each shaft support section arranged in each section and extending over the length of each of the elongated hollow interiors of said support shafts, the free ends of each of said shafts resting upon said rod, each rod being supported by said bottom side and bridging the slots in said bottom side.

4,614,337

MOVABLE SURFACE APPARATUS, PARTICULARLY FOR PHYSICAL EXERCISE AND TRAINING

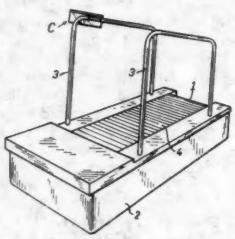
Rolf Schönenberger, Zurich, Switzerland, assignor to Woodway AG, Glarus, Switzerland

Division of Ser. No. 926,149, Jul. 19, 1978, Pat. No. 4,334,676, which is a continuation-in-part of Ser. No. 616,951, Sep. 26, 1975, abandoned. This application Mar. 29, 1982, Ser. No. 362,622

Claims priority, application Switzerland, Sep. 23, 1977, 11880/77

Int. Cl.[4] A63B *23/06*

U.S. Cl. 272—69 **21 Claims**



1. Movable surface apparatus for physical exercise and training comprising

an elongated essentially rectangular support frame having four corner regions;

two rotatable end roller means carried by said frame, one end roller means each, being located at respective opposite end regions of the frame, at least one of the end roller means having a toothed or ribbed circumference, each end roller means including a roller element located adjacent a respective corner region of the frame;

a plurality of closely adjacent, movably connected, transversely positioned step elements forming an endless, articulated, continuously movable support surface looped about said rotatable roller elements to form an upper run and a lower run;

toothed or ribbed belt means secured to the inside of said movable surface and engaged with the end roller element, or elements, having the toothed or ribbed circumference;

two elongated support means, including a plurality of support rollers secured to the frame and projecting inwardly therefrom beneath the underside of the upper run of the articulated support surface,

one support means at each side of the support frame, to support a respective side of the support surface and located beneath the upper run of said articulated support surface;

the underside of the upper run of the movable support surface including engagement cushioning means being located with respect to the support means for cushioned resilient surface engagement with the support rollers when the upper run of the support surface is located in the region of placement of a load thereon,

the support means providing support for the upper run of said endless articulated continuous movable support surface intermediate said roller elements;

and means for guiding said endless support surface over said rotatable end roller elements and for ensuring true running of said support surfaces over the end roller elements.

4,614,338

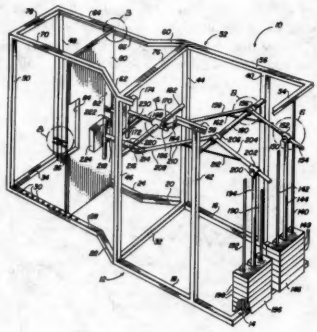
HORIZONTAL FORCE EXERCISE APPARATUS

David D. Castillo, 3808 S. 14th St., Phoenix, Ariz. 85040

Filed Oct. 29, 1984, Ser. No. 665,716

Int. Cl.[4] A63B *21/06*

U.S. Cl. 272—117 **12 Claims**



1. Horizontal exercise apparatus, comprising, in combination:

frame means, including a first cross member and a second cross member;

horizontal rod means secured to the first cross member of the frame means and movable horizontally in response to force exerted by a user of the apparatus;

pivot rod means secured to the second cross member of the frame means and connected to the horizontal rod means and pivoting on the second cross member of the frame means in response to the horizontal movement of the horizontal rod means including:

a first pivot rod connected to the horizontal rod means and pivotally connected to the frame means for pivoting on the frame means in response to horizontal movement of the horizontal rod means,

a second pivot rod pivotally connected to the frame means and connected to the first pivot rod for pivoting on the frame means in response to pivotal movement of the first pivot rod, and

lock rod means for adjustably securing together the first and second pivot rods to vary the length of movement of the first horizontal rod; and

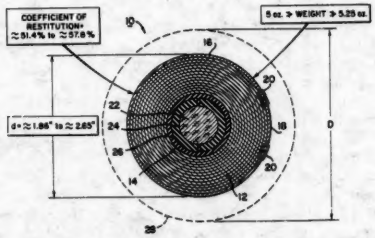
weight means secured to the frame means and movable vertically in response to the pivoting of the pivot rod means.

4,614,339

BATTING PRACTICE BASEBALL AND METHOD

Stephen M. Schanwald, 1130 N. Dearborn, Apt. 2803, Chicago, Ill. 60610

Filed Apr. 16, 1984, Ser. No. 600,505
Int. Cl.[4] A63B 69/00, 37/00
U.S. Cl. 273—26 R 10 Claims



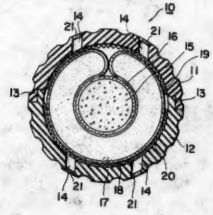
1. A batting practice baseball for use in batting practice comprising an interior portion and outer cover means for covering said interior portion, said outer cover means having an outer surface for engagement by a baseball bat, said interior portion and said outer cover means forming a completely spherical batting practice baseball having an outer diameter measured at said outer surface in the range of from 1.86 inches to 2.65 inches and having a total weight in the range of from five ounces to five and one-quarter ounces avoirdupois.

4,614,340

SMOKE EMITTING GAME BALL

Fumio Hosoya, Akigawa, Japan, assignor to Hosoya Pyrotechnics Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1984, Ser. No. 676,721
Int. Cl.[4] A63B 43/00, 69/36, 37/06
U.S. Cl. 273—60 B 3 Claims



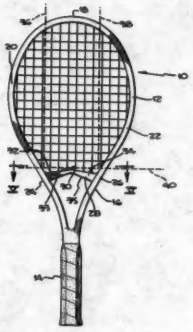
1. A spherical game ball for emitting smoke comprising:
a central core of a detonator material; a layer of a smoke emitting material surrounding said detonator material to be ignited by said detonator material upon impact thereof to emit smoke; an outer shell covering said layer of said smoke emitting material and having at least one aperture for allowing the smoke to pass therethrough; and a wire net interposed between said layer of said smoke emitting material and said outer shell extending at least below said aperture, said wire net being between 100 and 10 mesh and extending to cover not less than two thirds of the overall internal surface area of said outer shell for preventing the ignited smoke emitting material from spilling out of said aperture.

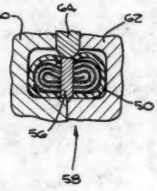
4,614,341

TENNIS RACKET FRAME MADE OF METAL OXIDE FIBERS AND CERAMIC PARTICLES

David Fernandez, 1457 Dara St., Camarillo, Calif. 93010

Filed Jul. 19, 1984, Ser. No. 632,453
Int. Cl.[4] A63B 49/10
U.S. Cl. 273—73 C 12 Claims





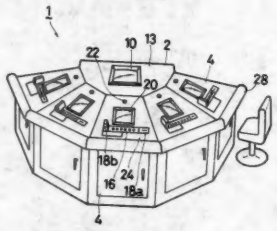
1. A method for making a tennis racket frame having a head portion adapted for mounting a plurality of tennis strings, said method comprising the steps of:
preparing a tennis frame precursor from uncured composite material, said frame precursor having a head portion;
placing string inserts at spaced locations around said frame precursor head portion, said string inserts being rod shaped and extending perpendicularly through said frame precursor, said inserts having a cross-sectional area which is larger than the cross-sectional area of the tennis strings and being softer than the cured composite material;
curing said tennis frame precursor with said inserts located therein for a sufficient time and at a sufficient temperature to form a composite tennis racket frame having a head portion with said string inserts molded therein;
forming holes in said inserts of sufficient size for said tennis strings to pass therethrough for mounting, said holes being sufficiently small so that said tennis strings are surrounded by said inserts when said strings are mounted within the formed holes.

5. A tennis racket frame comprising a head portion, a handle portion and a neck portion extending between said head and handle portions and wherein said head portion is adapted to be strung; said frame comprising a shell comprising polycrystalline metal oxide fibers in a resin matrix wherein each of said metal and oxide fibers consists essentially of aluminum oxide, boron oxide and silicon dioxide.

4,614,342
ELECTRONIC GAME MACHINE SUITABLE FOR CHANCE AND GAMBLING CARD GAMES

Yoshiyuki Takashima, Ishikawa, Japan, assignor to Doyle Davis, Las Vegas, Nev. and Nanao Corporation, Ishikawa, Japan

Filed Nov. 7, 1984, Ser. No. 668,903
Claims priority, application Japan, Apr. 19, 1984, 59-79596
Int. Cl.[4] A63F *1/00*
U.S. Cl. 273—85 CP 16 Claims



1. An electronic game machine comprising:

dealer means for controlling operation of a chance card game, said dealer means including a first data processing unit, a first memory, a first display panel, and a first power source;

a plurality of discrete player means, for allowing either automatic or user operated play between at least one of said discrete player means and said dealer means, each of said plurality of discrete player means being compatible to each other and including a second data processing unit, a second memory, a second panel display, a second power source, a manual control unit, and a handling unit;

means for indicating to each of said plurality of discrete player means the direction in which said dealer means is distributing the cards among the plurality of discrete player means;

display control means for selectively displaying cards from said dealer means in either a face-up or face-down orientation in each of said plurality of discrete player means; and

game condition detection means in said dealer means for calculating the results of game data stored in said first memory and for detecting current game conditions.

4,614,343
GOLF SWING TRAINING DEVICE

Ronald F. Radway, Okemos, Mich., assignor to Snapper, Inc., Lansing, Mich.

Filed Feb. 11, 1985, Ser. No. 700,473
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—186 A 5 Claims

1. In a golf swing training device for use by golf instructors and golfers comprising:

a flexible hollow golf club shaft, said shaft provided with a golf club hand grip at the upper end thereof;

a mechanical head assembly fixedly connected to the lower end of said shaft by use of shaft connector assembly means, said mechanical head assembly comprising:

a barrel housing having a pair of opposed snap ring-engaging finger receiving slots provided therethrough;

a weighted spring biased cartridge member slidably mounted within said barrel housing, said weighted cartridge member provided with a pair of opposed pivotally mounted outwardly curved spring-biased snap ring-engaging fingers, said snap ring-engaging fingers extending through said finger receiveing slots when said cartridge member is in its upper rest position within said barrel housing;

an upper spherical cartridge-engaging locator bearing provided within said barrel housing being in operative engagement with the lower end of said weighted cartridge member;

a main compression spring provided within said barrel housing in operative engagement with said upper locator bearing to maintain said weighted cartridge member in its upper rest position within said barrel housing, said main compression spring being in operative engagement with said upper cartridge-engaging locator bearing at the upper end thereof;

a lower spherical locator bearing provided within said barrel housing being in operative engagement with the lower end of said main compression spring;

an adjustable head closure member provided in threaded closure engagement with the lower end of said barrel housing and having an upper edge adjacent the external surface of the barrel housing and having an upper edge adjacent the external surface of the barrel housing, said adjustable head closure member being in positive engagement with said lower spherical locator bearing so as to selectively vary the tension of said main compression spring by selective threaded adjustment of said adjustable head closure member in relation to the barrel housing; said shaft connector assembly means comprising:

a collar member having a shaft-receiving bore therethrough which is adapted for press-fit engagement with said hollow shaft positioned therethrough;

a longitudinally oriented expander pin in press-fitted engagement within the lower end of said hollow shaft so as to expand said hollow shaft into fixed positive engagement with the interior of said collar member, said collar member defining a lower downwardly extending narrow neck portion adapted for press-fit engagement within the upper interior end of said barrel housing; and

a transverse spring pin positioned within a diametral transverse bore through said barrel housing, said neck portion of said collar member, said hollow shaft and said expander pin so as to maintain said barrel housing, said collar member, said hollow shaft and said expander pin in permanent fixed mating engagement; and

a snap ring member slidably provided on the external surface of said barrel housing, said snap ring member retained in its upper rest position on said barrel housing by the ends of said snap ring-engaging fingers extending through said finger receiving slots, said snap ring selectively releasable to rapidly slide downwardly along said barrel housing into snap sound-engaging contact with the upper edge of said adjustable head closure member when the centrifugal force created by the properly executed swing of the golf club training device causes said weighted cartridge member to move downwardly within the barrel housing so as to retract said snap fingers within said barrel housing upon conatct with the lower edges of said longitudinal slots,

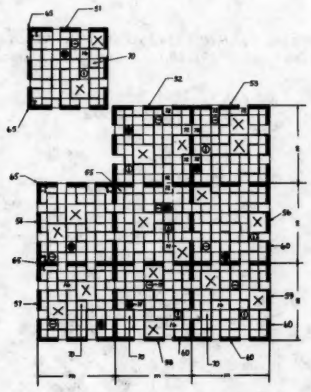
thereby releasing said snap ring to also move downwardly in response to the centrifugal force created by the properly executed swing so as to strikably engage the upper edge of said adjustable head closure member to impart a simulated feel and sound of a properly struck golf ball to the golfer.

4,614,344

INTERCHANGEABLE GAME BOARD

Patrick G. O'Connor, P.O. Box 7476, F. D. R. Station, New York, N.Y. 10150

Filed Aug. 5, 1982, Ser. No. 405,508
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—283 **11 Claims**



1. A game board comprising a plurality of incremental interchangeable game board segments, each of said game board segments having a plurality of sides and being identically shaped in the form of an equilateral geometric figure;

each of said game board segments further comprising a surface having depicted thereon entry and exit point locations, each of said sides having an equal number of entry and exit point locations, said entry and exit point locations being equally positioned on said sides such that where a game segment is oriented at (360/n)° increments, when n is the number of sides of said game board segment, the entry and exit point locations of each side of said game board segment mate with the entry and exit point locations of an adjacent game board segment;

each of said surfaces further having depicted thereon a labyrinth pathway design whereby the pathway design is a network of individual pathways and every entry and exit point location of a game board segment is connected by a pathway to at least one other distinctly different entry and exit point location on said game board segment;

at least one of said labyrinth pathway designs further including at least one cul-de-sac pathway branching off from a pathway, said cul-de-sac pathway comprising an entry and exit point location adjacent said pathway such that said pathway has access to said cul-de-sac pathway, said cul-de-sac pathway not being connected to at least one other different entry and exit point location.

4,614,345

AUTOMATIC RESETTING TARGET

Steven P. Doughty, P.O. Box 23084, Jacksonville, Fla. 32241

Filed Mar. 22, 1985, Ser. No. 715,174
Int. Cl.[4] F41J *5/06, 7/00*
U.S. Cl. 273—381 **1 Claim**

1. A steel target for shooters which resets itself comprising

a. a face plate which screws on and off the stem

b. a stem with a threaded tip at the top, an axle in the middle and a counter weight at the bottom

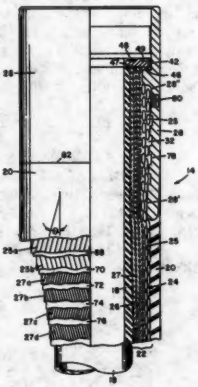
c. a base constructed of two columns rising from the platform with a stem stop joining the columns at the top and a counter weight stop on the platform.

4,614,346

INFLATABLE UNITARY PACKER ELEMENT HAVING ELASTIC RECOVERY

Leonard N. Ito, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 12, 1982, Ser. No. 357,498
Int. Cl.[4] F16J *15/48*
U.S. Cl. 277—34 **35 Claims**



1. An inflatable packer comprising:

an elastomeric tubular core;

an outer cover;

an annular reinforcement sheath sandwiched between the core and cover and comprising multiple reinforcement zones, namely:

a strength zone composed of strain-resisting elements of relatively high modulus, said elements being helically disposed, alternately in opposite lay sense within the sheath annulus at lead angle(s) of less than 40°; and

a transition zone disposed radially inwardly of the strength zone composed of a plurality of layers of

strain-resisting elements of relatively low modulus compared to those of the strength zone, portions of the low modulus elements being helically disposed respectively in opposite lay sense within the sheath annulus at lead angle(s) of less than 40°; and

sleeve means to which at least a portion of the reinforcement is attached at respective ends of the packer.

4,614,347

ASSEMBLED TRIMMING AND SEALING STRIP

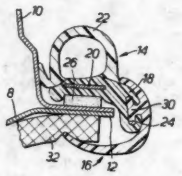
Werner Kruschwitz, Viersen, Fed. Rep. of Germany, assignor to Draftex Industries, Limited, Edinburgh, Scotland

Filed Nov. 19, 1984, Ser. No. 673,169

Claims priority, application United Kingdom, Jan. 27, 1984, 8402139

Int. Cl.⁴ F16J *15/12*; E06B *7/16*

U.S. Cl. 277—184 **4 Claims**



1. A trimming and sealing strip assembly for mounting on a flanged joint running at least partly around a door opening in a vehicle body, comprising

first and second separate elongated parts of resilient material each of generally L-shape in cross-section which are mechanically interlocked together to define a generally channel-shape which embraces the flanged joint,

the first part presenting a surface which faces towards a surface of the flanged joint on the outside of the vehicle body and which is secured thereto by adhesive and presenting another surface facing in the opposite direction and on which is mounted a soft and resilient seal,

the said second part being adapted to hinge relative to the first part about an axis parallel to the elongate direction so as to cover the edge of, and to secure, a lining terminating adjacent the flanged joint on the inside of the vehicle body.

4,614,348

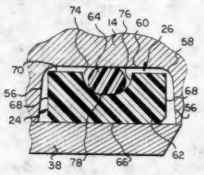
ANTI-BLOWOUT SEAL

Paul J. E. Fournier, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Oct. 4, 1985, Ser. No. 784,557

Int. Cl.⁴ F16J *15/20*

U.S. Cl. 277—188 A **6 Claims**



1. A seal for pressurized fluid systems adapted to establish a seal between a first cylindrical member received within a second member having a cylindrical opening, the second member having an annular concentric recess intersecting said opening wherein the seal is located within the annular recess, the recess being defined by radial sides and a base surface, the seal being characterized by its resistance to being blown out of the recess by pressurized fluid comprising, in combination, an annular body of semi-rigid synthetic plastic material having an inner cylindrical bore sealingly engageable with the first cylindrical member and having an axis, axially spaced radially extending sides spaced apart a distance slightly less than that separating the recess sides, and an outer circular circumference radially spaced from said bore a distance slightly less than the radial depth of the recess whereby said body substantially fills the second member recess and the recess confines said body from significant radial and axial movement therein, an annular ring recess defined in said body outer circumference intermediate said body sides and concentric to said body axis, said ring recess being defined by radially extending sides intersecting said body circumference and a bottom surface, the radial dimension of said body from said inner bore to said ring recess bottom surface being at least as great as the radial depth of said ring recess from said body outer circumference to said ring recess bottom surface, and an annular elastomeric seal ring within said ring recess having a radial cross-sectional dimension greater than the radial depth of said ring recess whereby said seal ring engages the recess base surface and said body bore sealingly receives the first cylindrical member.

4,614,349

TOOL FOR FLOOR COVERING INSTALLATION

Michael D. Wenzel, 2251 Clinton Ave. #E, Alameda, Calif. 94501

Filed Jul. 13, 1984, Ser. No. 630,394

Int. Cl.⁴ B62D *61/12*

U.S. Cl. 280—43.1 **15 Claims**

1. A hand truck and tool for use in installing floor coverings, comprising:

a handle portion;

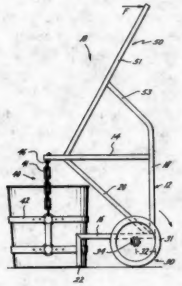
a load-carrying portion pivotally connected to the handle portion along a horizontal pivot axis, such that the handle portion can be swung downwardly or upwardly with respect to the load-carrying portion as the latter rests on a floor or other surface, the load-carrying portion including means for receiving a tool box of floor covering installation tools, and also including a pair of floor covering engaging glides at its bottom, extending transversely to a path of travel of the tool and positioned to engage the surface of a floor covering material to slide over it and press it into tight engagement with adhesive on a floor when the glides are moved over the floor covering surface with the weight of the tool box on the load-carrying portion;

means associated with the handle portion and the load-carrying portion for selectively locking the handle portion in a full upright position when desired, for use as a hand truck; and

a pair of wheels connected to the load-carrying portion, behind the glides and adjacent to a rearward one of the glides, so arranged to contact a floor or other surface

when the hand truck is tipped back, the wheels being connected to the load-carrying portion such that they are elevated above the floor when the glides are in contact with the floor.

4,614,350
UTILITY CARRIER
Floyd G. Bunch, P.O. Box 163, Paige, Tex. 78659
Continuation of Ser. No. 519,533, Aug. 1, 1983, abandoned. This application Oct. 28, 1985, Ser. No. 792,640
Int. Cl.[4] B62B *1/06*
U.S. Cl. 280—47.24 **15 Claims**



1. A utility carrier for transporting potted plants or other tall objects having a low center of gravity, comprising:

a frame having a generally C-shaped configuration, the frame having a top, a base, an open side corresponding to the opening in the generally C-shaped configuration, a substantially vertically extending closed side opposing the open side when the carrier is in a rest position, and opposing sides extending on each side between the open and closed sides;

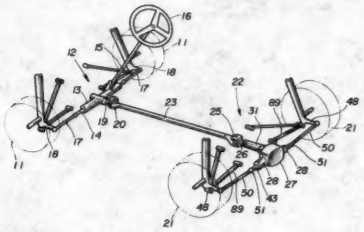
a rolling support member rotatably connected to the frame proximate the base of the frame for movably supporting the frame, said rolling support member being positioned between the open side and the closed side to have an axis of rotation a selected distance for leverage from the closed side;

a rest support member mounted on the base of the frame at the open side of the frame, the rest support member being positioned to extend downwardly in use to support the frame with the rolling support member;

a harness assembly for holding such an object, the assembly being connected to the C-shaped frame such that the harness assembly extends across the open side, and pivots over the axis of rotation of the rolling support member with the weight of such an object when the frame is tilted in use; and

lever means for tilting the C-shaped frame towards the closed side such that the harness assembly pivots over the axis of rotation of the rolling support member to centralize the center of gravity of such an object over the rolling support member, said lever means comprising an elongated handle having a first end and a second end, the handle being secured at the first end to the frame proximate the open side of the frame and being angled upwardly and towards the closed side in use, the lever means further comprising a bracing member extending between the handle and the closed side to interconnect the handle with the closed side, the bracing member being connected to the handle at a selected point along the handle between the first and second ends of the handle and extending angularly to a point on the top of the closed side of the frame such that a moment arm is created between the selected connecting point of the handle and the second end of the handle such that the application of a force on the handle generally toward the closed side of the frame exerts a force on the moment arm created by the selected distance between the rolling support member and the closed side to rotate and tilt the carrier around the rolling support member toward the closed side.

4,614,351
STEERING APPARATUS FOR A VEHICLE HAVING STEERABLE FRONT AND REAR WHEELS
Shoichi Sano, Tokyo; Yoshimi Furukawa, and Yutaka Tashiro, both of Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 25, 1985, Ser. No. 748,672
Claims priority, application Japan, Jun. 25, 1984, 59-130293; Jun. 25, 1984, 59-130294; Jun. 25, 1984, 59-130295; Jun. 25, 1984, 59-130296; Jun. 25, 1984, 59-130297
Int. Cl.[4] B62D *7/00*
U.S. Cl. 280—91 **16 Claims**



1. A steering apparatus for a vehicle having steerable front and rear wheels, comprising:

(a) front wheel steering system for steering the front wheels;

(b) a rear wheel steering system for steering the rear wheels;

(c) linkage means for coupling said front and rear wheel steering systems to each other; and

(d) said rear wheel steering system comprising:

(i) a housing adapted to be mounted on the vehicle;

(ii) an input shaft angularly movably supported by said housing and having a front end coupled to said linkage means and an eccentric shaft on a rear end thereof;

(iii) a joint member supported by said housing so as to be movable transversely of the vehicle, said joint member having a pair of slanted surfaces extending substantially vertically and cooperating with each other in constituting a tapered portion;

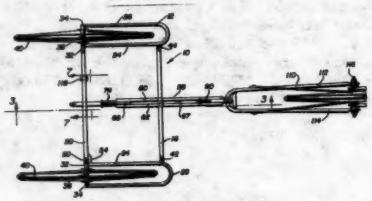
(iv) a pair of tie rods connected at first ends to said joint member and at opposite ends to the rear wheels; and

(v) a slide member held in slidable engagement with said joint member and operatively coupled to said eccentric shaft for movement in response to angular movement of said input shaft, said slide member having a pair of slanted surfaces extending substantially vertically and cooperating with each other in constituting a tapered portion, said tapered portion of said joint member and said tapered portion of said slide member being held in engagement with each other to keep said joint member and said slide member in tapered engagement with each other.

4,614,352
FOLDABLE BICYCLE CART
Moses Cervantes, 8010 Pebble Dr., New Orleans, La. 70128
Filed Dec. 3, 1985, Ser. No. 804,184
Int. Cl.[4] B62K *27/12*
U.S. Cl. 280—294 **10 Claims**

1. A foldable bicycle cart including a central longitudinal towing tongue, a pair of opposite side front-to-rear extending wheel support frames laterally spaced on opposite sides of said

central tongue, front and rear transverse frame members extending between and pivotaly connected between the front and rear ends, respectively, of said wheel support frames and forming a parallel linkage with said wheel support frames, a pair of opposite side wheels journalled from said wheel support frames, a mount mounted on said rear transverse frame member centrally intermediate its opposite ends, pivot means pivotally mounting a forward portion of said tongue to said front transverse member centrally intermediate its opposite ends for oscillation of said tongue relative to said front transverse mem-



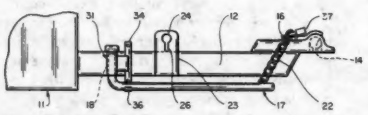
ber about an upstanding axis and with said tongue being longitudinally shiftable relative to said axis, the forward end of said tongue including hitch means for hitching said tongue to a towing vehicle, the rear end of said tongue and said mount including first and second coacting anchor means, respectively, operative to releasably anchor said tongue rear end to said mount, said wheel support frames and transverse frame members, when said anchor means is released, being relatively swingable toward collapsed positions with said wheel support frames being closely laterally spaced apart on opposite sides of said tongue.

4,614,353

STORAGE ASSEMBLY FOR TRAILER HITCH TORSION BARS

Edward F. Mayer, San Jose, Calif., assignor to Forems, Inc., Novelty, Ohio

Filed May 23, 1985, Ser. No. 737,325
Int. Cl.[4] B60D *1/14*
U.S. Cl. 280—406 A **4 Claims**



1. A storage assembly for trailer torsion bars of the type having an elongated arm with a greased tip end adapted to engage the trailer hitch and the other end adapted to be secured to the trailer tongue for applying torsion to the trailer hitch, said assembly comprising a pocket having a downwardly facing open end for receiving the upwardly extending greased tip end of the torsion bar, a support into which the arm is rotated after insertion in the pocket to support the bar, and means for securing the assembly to the trailer tongue.

4,614,354

MULTI-INTERCHANGEABLE TOW BAR

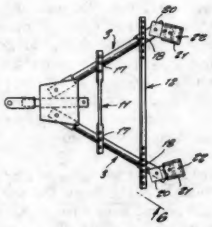
Irvin D. Stagner, 1814 Ellis, Wichita, Kans. 67211

Continuation of Ser. No. 499,438, May 31, 1983, abandoned.
This application Mar. 26, 1985, Ser. No. 716,366
Int. Cl.[4] B60D *1/14*
U.S. Cl. 280—415 R **1 Claim**

1. A Multi-Interchangeable Tow Bar that is used to tow one vehicle behind another, in which, a basic "Y" configuration tow bar is used comprising a front coupler at a front end of a center bar, which is, used to connect said tow bar with a towing vehicle, said front coupler is on said front end of said center bar that is welded between two plates to form a yoke, wherein, two pivotal arms are engaged between said two plates of said yoke with bolts through bolt holes in said yoke and through bolt holes at said front end of said arms then after washers are placed on bolts and nuts are screwed onto bolts to secure said arms to said yoke, wherein, said arms have bolt holes in intermediate portion to receive bolts to secure a forward safety bar, moreover, in rearward portions of said arms are bolt holes to receive bolts to secure a rearward safety bar to said tow bar arms whereas, on rear end of said arms are bolt holes to receive bolts and multi-interchangeable connector assemblies which are the final contact part of said tow bar with vehicle to be towed; whereas, said basic "Y" configuration of said tow bar is without any permanently connected parts attached to rear end of said center bar, without permanently connected chains, without any permanently attached connector assemblies, and without any permanently connected parts on rear end of said tow bar arms at the point where connector parts connect said tow bar to said vehicle to be towed:

A. wherein, the improvement comprises in combination of said basic "Y" configuration of said tow bar without any permanently connector parts on rear end of said tow bar arms and a plurality of selective components parts that can be assembled into said multi-interchangeable connector assemblies that can change said basic "Y" configuration of said tow bar into different types of tow bars:

B. whereas, a clamping onto bumper type tow bar is accomplished by assembling a connector assembly for each of



said basic tow bar arms, by connecting each of pivotal lower jaws to each of interchangeable swivel braces in which said swivel braces have two pair of perpendicularly positioned bolt holes in which the rear two bolts holes of said swivel braces are used to attach each of the pivotal lower jaws to said swivel braces by placing bolts through bolt holes in said lower jaw's apertures and said swivel braces rear bolt holes with washers placed on bolts and nuts screwed onto bolts, then after, apertures of each said swivel braces are placed onto rear end of said basic tow bar arms and secured by placing bolts through bolt holes in rear end of said basic tow bar arms and bolt holes in said swivel braces apertures with washers placed onto bolts and nuts screwed onto bolts then after one set of type of upper jaws is chosen, and secured to said lower jaws when said tow bar is connected to a vehicle to be towed, whereas, long bolts, washers and nuts are used to secure one set of upper jaws to said lower jaws and when another set of alternate upper jaws are chosen, a short chain bolts, washers and nuts are used to secure said alternate upper jaws, then after a safety chain is used connected between front and rear vehicle:

C. whereas said basic "Y" configuration of said tow bar can be changed into an abutment up to bumper type of tow bar by, removing said connector assemblies if any attached to rear end of said tow bar arms and by selecting each of the interchangeable vertical swivel braces one for each said basic tow bar arms and attaching one changeable plate onto each side of each of said vertical swivel braces, with

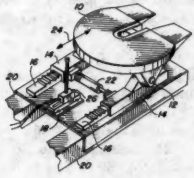
bolts through bolt holes on each side of said vertical swivel braces apertures, then after, washers are placed onto bolts and nuts screwed onto bolts which secures said changeable plates to said vertical swivel braces for allowance of adjustment of said vertical swivel braces; then after, each said vertical swivel braces apertures are placed onto rear end of said basic tow bar arms, wherein, bolts are placed through bolt holes in apertures and rear end of said tow bar arms to secure said assemblies to said basic tow bar, then washers are placed onto bolts and nuts are screwed onto bolts wherein, a center brace with apertures is placed onto rear end of said center bar by placing said center brace apertures over the rear end of said center bar in which bolts are placed through the bolt holes in said center bar and bolt holes in said center brace apertures to secure said center brace to said basic tow bar then after, washers are placed onto bolts with nuts screwed onto bolts; following this is a draw chain tightening hook's bolt shaft end is placed into a bolt hole on the lower end of said center brace then a washer and nut are placed onto bolted shaft of said tightening hook; then after, a draw chain is placed longitudinal said tow bar arms and through chain hole at lower end of each said vertical swivel braces to be attached to the underneath side of said vehicle to be towed when securing said tow bar to rear of said vehicle then after the middle of said draw chain is placed into hole on said draw chain tightening hook to pull said tow bar tight up to said vehicle's bumper to be towed, then after, said draw chain's tightening hook's nut is screwed up tight.

4,614,355

FIFTH-WHEEL ASSEMBLY

Richard L. Koch, 7129 N. 69th Ave., Glendale, Ariz. 85303

Filed May 21, 1984, Ser. No. 612,145
Int. Cl.[4] B62D *53/08*
U.S. Cl. 280—438 R **6 Claims**



1. An improved fifth wheel assembly for use on a tractor having a frame, a cab, a drive axle and a steering axle, comprising:

a mounting plate fixedly coupled to the frame of said tractor;

a coupling assembly slideably mounted on said mounting plate and capable of being moved in forward and rearward directions; and

adjustably positional first means coupled to said mounting plate for triggering an alarm signal when said coupling assembly has been moved to a desired position, said first means including

a mounting bracket fixedly coupled to said mounting plate,

switch means coupled to said mounting bracket, and

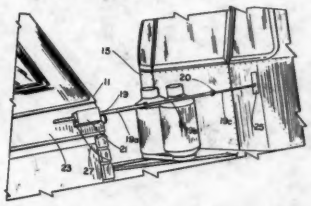
second means coupled to said switch means and responsive to movement of said coupling assembly for triggering said switch means.

4,614,356

APPARATUS FOR ALIGNING HITCHES OF TOWING AND TOWED VEHICLES

Roy Mills, 1128 Karla Dr., Hurst, Tex. 76053

Filed Sep. 23, 1985, Ser. No. 779,230
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 280—477 **7 Claims**



1. An apparatus for aligning hitches of towing and towed vehicles, comprising in combination:

a bracket;

attaching means for releasably attaching the bracket to a towing vehicle;

a rod;

mounting means for slidably mounting the rod to the bracket with the rod protruding rearwardly for contact with a target located on the towed vehicle;

positioning means for positioning the rod so that when the rod is in contact with the target, and the towing vehicle and bracket have moved rearwardly relative to the rod a predetermined amount, alignment of the hitches occurs; and

signal means carried by the bracket for detecting when the predetermined amount of relative movement between the rod and bracket has occurred, and for signaling the driver of this occurrence; the positioning means comprising:

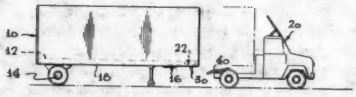
a plurality of telescoping sections in the rod for varying the length of the rod.

4,614,357

TRUCK-TRAILER ANTITHEFT LOCKING SYSTEM

John M. Murray, 8633 Delmonico Ave., Canoga Park, Calif. 91304

Filed Jul. 2, 1984, Ser. No. 626,771
Int. Cl.[4] B60D *1/10*
U.S. Cl. 280—507 **19 Claims**



1. An antitheft locking system for a semi-trailer comprising:

a plunger for positioning with respect to the hitch pin on a semi-trailer, said plunger being movable from a retracted position to an extended position so that in the extended position it inhibits access to the hitch pin on the semi-trailer and in its retracted position, permits access to the hitch pin; and

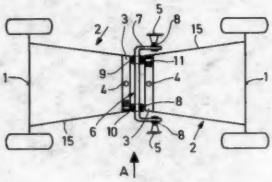
means for controllably extending said plunger.

4,614,358

STABILIZER FOR VEHICLES

Markus Wymann, Niederweningen, Switzerland, assignor to Bucher - Guyer AG, Niederweningen/Zurich, Switzerland

Filed Apr. 12, 1985, Ser. No. 722,321
Claims priority, application Switzerland, Apr. 19, 1984, 1973/84
Int. Cl.[4] B60G *21/00, 11/26*
U.S. Cl. 280—689 11 Claims



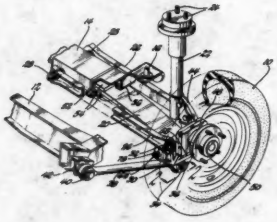
1. In a device for stabilizing a vehicle against roll, said vehicle having a pair of longitudinally disposed central frame members, each having first and second ends, the first ends of said central frame members opposed from each other on the longitudinal axis of the vehicle, said vehicle having rigid axles and said axles each mounted on one of longitudinally disposed central frame members, means for pivotably connecting said central frame member opposed ends respectively to the chassis of the vehicle, and means for flexibly connecting said central frame member opposed ends to opposite longitudinal sides of the chassis.

4,614,359

VEHICLE WHEEL WITH HEIGHT ADJUSTMENT

Donald G. Lundin, Warren, and Joseph J. Knable, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1985, Ser. No. 714,526
Int. Cl.[4] B60G *3/06*
U.S. Cl. 280—699 3 Claims



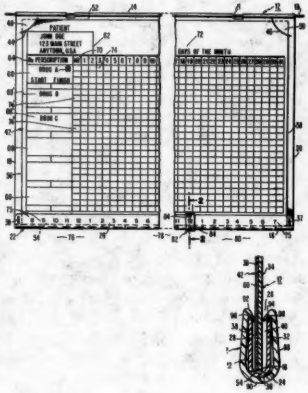
1. In vehicle wheel spring suspension including a wheel support member and laterally extending control arm means swingably mounted by inboard pivot means thereof on the vehicle sprung mass and connected by outboard pivot means thereof to the wheel support member to constitute therewith an unsprung mass, height adjustable suspension spring means comprising a leaf spring secured to the vehicle sprung mass and extending for connection at its distal end to said unsprung mass, and a sprung mass height adjusting connector assembly interconnecting said distal end of the leaf spring with said unsprung mass independently of said outboard pivot means including means selectively adjustable in fine increments to vary the vertical relation between said distal end of the leaf spring and said unsprung mass.

4,614,360

PATIENT MEDICATION RECORD SYSTEM

Judith M. Sheehan, 2 Woodcrest Dr., Armonk, N.Y. 10504, and Peter J. Engelman, Stamford, Conn., assignors to Judith Sheehan, Armonk, N.Y.

Filed Oct. 21, 1983, Ser. No. 544,363
Int. Cl.[4] B42D *17/00, 15/00;* B42F *21/00;* G09D *3/00*
U.S. Cl. 281—45 12 Claims



1. A hospital patient medication record card system, comprising, in combination,

a flat card member including a front face having a printed design and data associated with said design relating to a particular patient and patient medication instructions including type of medication and time of administration of said medication, said card member including opposed generally horizontal top and bottom edges and having opposed generally vertical side edges,

means for supporting said card member extending between said top and bottom edges and said side edges and including horizontal upper and lower portions generally aligned with said horizontal top and bottom edges,

guide means connected to said means for supporting and extending along one of said horizontal edges between said side edges,

markings associated with said guide means visible to a person viewing said card member, said markings indicating general times for administering said medication, said markings extending along said one of said horizontal edges between said edges of said card member,

self-biased marker means for indicating selected markings of said markings designating a particular time for administering said medication, said guide means being for slidably mounting said self-biased marker means, said marker means being releasably held in a selected position by bearing force, and

means connected to said means for supporting for removably attaching said means for supporting to a general file of patient medication record cards.

4,614,361

MULTIPLE PART SHIPPING LABEL

Robert S. Foster, 3417 Louisiana, St. Louis, Mo. 63118

Filed Mar. 1, 1984, Ser. No. 585,155
Int. Cl.[4] B41L *1/22;* B42D *15/00*
U.S. Cl. 282—8 R 3 Claims

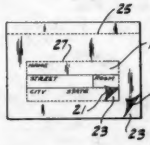
1. A multiple part shipping label comprising:

an upper layer having a space thereon for the entry of name and address data, said upper layer comprising stencil paper, said stencil paper being adapted to form a stencil

for subsequent transfer of said data to a package or packages by use of an ink roller or the like;

a removable lower layer having an adhesive coating on its back, said lower layer being disposed under and generally coincident with the upper layer and being separable therefrom, said lower layer having a line of weakness thereacross;

an intermediate layer disposed between the upper and lower



layers for immediate transfer of data entered on said upper layer of a predetermined portion of said lower layer, whereby said data need be entered only once; and

a die-cut line extending around said predetermined portion of the lower layer, whereby once said data is entered, the pre-determined portion of the lower layer having said data thereon may be removed from the remainder of the lower layer and attached to a shipping document or the like.

4,614,362

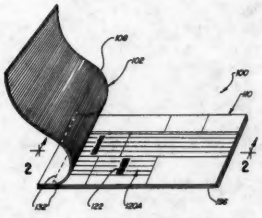
TAMPER RESISTING MACHINE READABLE NEGOTIABLE INSTRUMENTS AND METHOD OF MAKING AND USING SAME

Thomas J. Breen, Arlington Heights, and Sylvester H. Slowik, Naperville, both of Ill., assignors to Rand McNally & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 612,854, May 22, 1984, abandoned. This application Nov. 13, 1984, Ser. No. 670,572

Int. Cl.[4] B41L *1/20*

U.S. Cl. 282—9 R **41 Claims**



1. A method of preparing and using a multipart negotiable instrument of improved resistance to tampering by employing a machine readable pattern comprising the steps of:

(a) providing a first, generally planar web defining a first surface and a second surface with a layer of a material for transferring an image on at least a portion of the second surface of the first web to form an image transferring means;

(b) providing a second, generally planar web defining a first surface and a second surface and having image receiving material on at least selected portions of the first surface of the second web capable of receiving an image transferred from said image transferring means when said means is in contact with said material and a corresponding image is inscribed against the multipart instrument, said image receiving material comprising a material erasably bonded to the first surface of the second web and defacable when rubbed with organic solvents;

(c) providing a superposed machine readable pattern on at least one of said selected portions of said second web,

(d) securing said first web and said second web together in stacked relation so that at least a portion of the image transferring means on said second surface of said first web is in contact and in register with at least a portion of said machine readable pattern;

(e) transferring an image comprising a portion of said image transferring means from said image-transferring means to the surface of said image receiving material and confronting said machine readable pattern; and

(f) thereafter machine reading said pattern to ascertain whether said pattern has be altered.

4,614,363

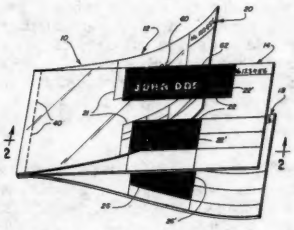
NEGATIVE-IMAGE GENERATING, TAMPER-RESISTING NEGOTIABLE INSTRUMENTS

Thomas J. Breen, Arlington Heights, Ill., assignor to Rand McNally & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 425,064, Sep. 30, 1982, Pat. No. 4,512,592. This application Jun. 30, 1983, Ser. No. 509,947

Int. Cl.[4] B41L *1/24, 1/36*

U.S. Cl. 282—22 R **10 Claims**



1. A multipart negotiable instrument having improved resistance to tampering after inscription of an image thereon, said instrument comprising in stacked relation at least a first, substantially transparent generally planar web, a second generally planar web and a third generally planar web, each having an upper surface and a lower surface;

said first web being secured within said intrument and having an image receiving layer on it lower surface,

said second web being removalby secured within said instrument and having an image transferring layer on its upper surface and an image receiving layer on its lower surface,

said third web being removably secured within said instrument and having an image transferring layer on its upper surface,

the image receiving layer on said first web contacting and confronting the image transferring layer on said second web,

the image receiving layer on said second web contacting and confronting said image transferring layers also said third web,

each said image transferring layer comprising a particulate matrix erasably bonded to said upper surface of the web and defacable when rubbed with an organic solevent, said image transferring layers also being removable when an adhesive tape is applied to said image transferring layers and then pull away; and

said image receiving layers comprising a waxy substance having a melting point range of about 165° F. to about 185° F.;

the image transferring layers each comprising an image visulaizing area that is capable of visualizing images when a corresponding image is inscribed against the surface of said first web, said image visualizing areas being in register respectively with the image receiving layers of said lower surfaces of said first and second webs.

6. A method of preparing a multipart negotiable instrument having improved resistance to tampering once the instrument has been issued comprising the steps of:

(a) providing a first, substantially transparent generally planar web defining an upper surface and a lower surface, said lower surface being adapted for receiving a transferred image and having thereon a coating of a waxy substance having a melting point range of about 165° F. to about 185° F.;

(b) providing a second, generally planar web defining an upper surface and a lower surface;

(c) coating a portion of the upper surface of the second web to form an image transferring layer zone, said image transferring layer zone comprising a particulate matrix erasably bonded to said surface, defacable when rubbed with an organic solvent and removable when an adhesive tape is applied to said matrix and then pulled away;

(d) coating the lower surface of the second web with a waxy substance having a melting point range of about 165° F. to about 185° F.;

(e) providing a third generally planar web defining an upper surface and a lower surface, said upper surface including an area capable of visualizing an image; and

(f) securing together said first, second and third webs in stacked relation with the upper surface of the second web that includes said image transferring layer zone contacting the lower surface of the first web that is adapted for receiving a transferred image, and with the third web beneath said first and second webs, said area of the upper surface of the third web capable of visualizing an image facing upwardly, said second and third webs being removably secured in said stack.

4,614,364

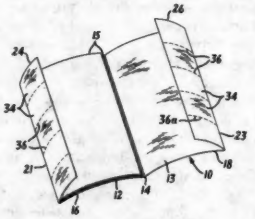
FREE STANDING INSERT WITH COUPON FLAPS

Allen A. Bortner, 34 Edgemere Dr., Searingtown, N.Y. 11507

Filed Dec. 21, 1984, Ser. No. 684,625

Int. Cl.[4] G09B *1/16;* **B42D** *3/12, 15/00, 3/04*

U.S. Cl. 283—45 **7 Claims**



1. An advertising insert cover comprising a rectangular sheet of material adapted to be imprinted with advertising copy,

said sheet being folded in two to form rectangular front and back cover portions meeting at a fold,

at least one of said cover portions being formed with a plurality of segments along its outer edge, said segments being separated from each other by tear lines extending perpendicularly to said outer edge, and said segments being connected to said cover portions along an uncut line extending parallel to said fold.

3. An advertising insert cover comprising a rectangular sheet of material adapted to be imprinted with advertising copy,

said sheet being folded in two to form rectangular front and back cover portions meeting at a fold, and

an inwardly folded flap formed along the outer edge of at least one of said front and back cover portions, said flap being sharply creased with respect to its associated cover portion and extending partway over the inner side of said associated cover portion towards the fold between said cover portions for retaining loose sheets within said cover, said crease being uncut along its entire length, and

said flap being divided into a plurality of segments adapted to be selectively separated from each other and said associated cover portion.

4,614,365

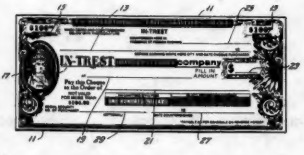
INTEREST-BEARING INSTRUMENT KIT

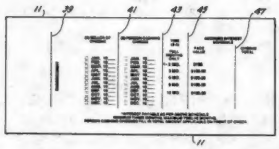
David Tresser, 90 E. 46th St., Brooklyn, N.Y. 11203

Filed Feb. 11, 1985, Ser. No. 700,119

Int. Cl.[4] B42D *15/00*

U.S. Cl. 283—59 **11 Claims**





1. An interest-bearing instrument kit comprising an interest-bearing instrument and a calculator for calculating the interest accumulated on said instrument,

a. said interest-bearing instrument comprising

1. an indication of the value of the instrument when issued or purchased;

2. a plurality of transverse lines printed on the face of said instrument for the entry of:

i. an issue or purchase date;

ii. the value of the instrument when cashed;

iii. the identity of the drawee of the instrument;

iv. the identity of the payee of the instrument

v. the signature and countersignature of the purchase of said instrument; and

vi. the date when the instrument is cashed; and

3. a plurality of columns on the reverse side of said instrument for the entry of:

i. the issue or purchase date;

ii. the date when the instrument is cashed;

iii. the time elapsed from the time of issuance to the date of cashing of said instrument;

iv. the face value of said instrument;

v. the total value of said instrument at the time it is cashed; and

vi. an endorsement of said instrument; and

b. said calculator comprising first and second flat, circular planar members concentrically affixed to each other at their centers in a manner to allow rotation of each planar member with respect to the other; wherein

1. said first circular planar member has at least two concentrically aligned scales contained thereon, the scales representing the total value of the interest-bearing instrument relative to the amount of time elapsed from the date of issue or purchase of said instrument to the date of cashing of said instrument; and wherein

2. said second planar member has at least one scale representing the face value of the instrument when issued or

purchased, in alignment with the concentrically aligned scale of said first planar member, whereby the second member can be totaled relative to the first member to visually obtain the total value of said instrument when cashed.

4,614,366

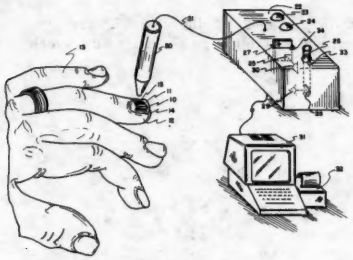
NAIL IDENTIFICATION WAFER

Vaughn W. North, and Richard W. Elggren, both of Sandy, Utah, assignors to EXACTident, Inc., Utah

Continuation-in-part of Ser. No. 553,770, Nov. 11, 1983. This application Feb. 21, 1984, Ser. No. 582,086

Int. Cl.[4] B42D *15/00*

U.S. Cl. 283—70 **33 Claims**



1. A method for identifying persons entitled to access to restricted areas or information comprising the steps of:

a. selecting a carrier suitable for attachment to a fingernail or toenail surface of the person;

b. encoding said carrier with a unique data format which authorizes access for the person to the area or information for the person;

c. permanently attaching the encoded carrier at a nail surface of the person;

d. scanning the nail surface for detection of the data format; and

e. comparing the scanned data format with an access code for determining if access is proper.

4,614,367

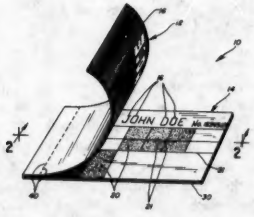
TAMPER-RESISTING MULTIPART NEGOTIABLE INSTRUMENTS

Thomas J. Breen, Arlington Heights, Ill., assignor to Rand McNally & Co., Skokie, Ill.

Continuation of Ser. No. 389,216, Jun. 17, 1982. This application Dec. 20, 1984, Ser. No. 683,961

Int. Cl.[4] B42D *15/00;* **B41L** *1/00;* **B41M** *5/02, 5/00*

U.S. Cl. 283—102 **23 Claims**



1. A multipart negotiable instrument having improved resistance to tampering after inscription of an image thereon, said instrument comprising at least a first generally planner web and a second generally planar web,

said first web defining a first surface and a second surface, said second surface including means for transferring an image to a surface in contact with the image-transferring means when a corresponding image in inscribed upon the first surface of said first web;

said second web being secured to said first web in stacked relation therewith, and defining a first surface and a second surface, said first surface being in contact with the second surface of said first web, the first surface of said second web being imprinted in selected zones and not in other zones with an image receiving layer which is erasably bonded in said selected zones to said first surface, said image receiving layer being a particulate matrix comprising particulate materials and a binder, said image receiving layer also being in register with at least a portion of said image transferring means of said first web and capable of receiving on the surface of said image receiving layer an image from said image transferring means when a corresponding image is inscribed against the first surface of said first web;

said image receiving layer being so erasably bonded to the second web that when an image is transferred onto the surface of said image receiving layer from said image transferring means said image remains on said surface of said image receiving layer and when an effort is made to erase it or remove it with an organic solvent, the image receiving layer and image are removed in the zone of erasure and the image receiving layer and image are defaced in the zone of attempted removal with organic solvent.

4,614,368

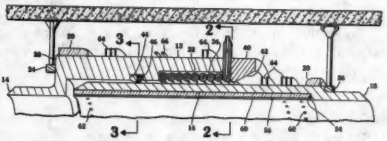
LIQUID METAL PIPE JOINT

John F. Couilahn, Bridgewater, N.J., assignor to General Dynamics Corp./Convair Division, San Diego, Calif.

Filed Feb. 19, 1985, Ser. No. 703,143

Int. Cl.[4] F16L *55/00;* **F16J** *15/00*

U.S. Cl. 285—10 **12 Claims**



8. In a method of forming a liquid tight joint between metal pipes, the steps comprising:

forming a sleeve on the end of one pipe;

forming an end section on another pipe of a greater diameter than said another pipe to form an offset, said end section having a diameter less than the inner diameter of the sleeve, bringing the end section into telescoping relationship with said sleeve forming an annulus between the inner surface of the sleeve and the outer surface of the end section;

providing a layer of insulation within the inner surface of said offset coextensive with said annulus so as to limit heat transfer from the end section into said annulus;

flowing fluid through said pipes some of which enters said annulus; and cooling an area of said annulus to solidify said liquid thus utilizing the liquid itself to form a seal.

4,614,369
CONNECTOR ASSEMBLY FOR FIBER-REINFORCED PLASTIC PIPE MEMBERS

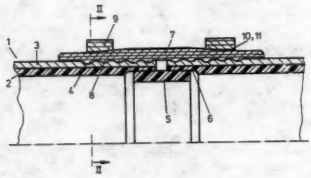
Friedhelm Overath, Schaffhausen, and Remo Saner, Büsserach, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Feb. 20, 1985, Ser. No. 703,277

Claims priority, application Switzerland, Feb. 20, 1984, 803/84

Int. Cl.[4] F16L *9/14*

U.S. Cl. 285—55 **6 Claims**



1. A connection assembly for joining together two pipe members consisting essentially of fiber-reinforced plastic material comprising:

a pair of pipe members, each including an inner pipe jacket consisting essentially of a thermoplastic material and an outer pipe jacket permanently bonded with said inner pipe jacket consisting essentially of a fiber winding impregnated with synthetic resin, said pipe members each having an end at which they are joined together;

a pair of semi-circular shells engaging externally around both said outer pipe jackets at said ends of said pipe members and permanently bonded thereto;

means for clamping said shells around said outer pipe jackets;

pipe stub means joining said pipe members together concentrically with each other and extending across said ends internally of said pipe members in cooperative relationship with said inner pipe jackets so as to form a fluid-tight seal therebetween;

grooves arranged on the outer circumference of said outer pipe jacket and complementary grooves arranged on the inner circumference of said semi-circular shells, said grooves and said complementary grooves being engaged with each other to form a positively interlocking connection between said pipe members;

said grooves and said complementary grooves being designed with a smooth wave-shaped configuration extending in the longitudinal direction of said pipe members; and

a bonding connection provided between said pipe members and said pair of shells.

4,614,370
APPARATUS PROVIDING A WELD-FREE JOINT FOR INTERSECTING PIPES OR TUBES WITHIN A CONDUIT SYSTEM

Fritz Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Josef Gartner & Co., Fed. Rep. of Germany

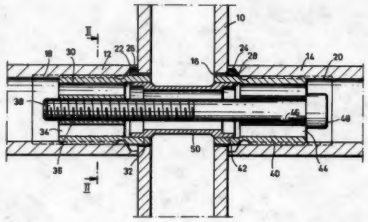
Filed May 31, 1983, Ser. No. 499,222

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220945

Int. Cl.[4] F16L *41/00*

U.S. Cl. 285—150 **18 Claims**

1. Apparatus for the weld-free connection of pipes or tubes abutting each other substantially perpendicularly within the conduit system of a temperature conditioning installation comprising two tubes each having an end thereof abutting against a third tube, said third tube having a throughbore, means defining a weld-free connection between said two tubes and said third tube including bush means, said bush means being within each of said abutting ends of said two tubes and having a portion thereof in intersecting relation to said third tube, and a sealing ring nested in said tube abutting end of each of said two tubes, at a location inwardly of its radial outermost limit,



and bearing against said third tube, thereby to form a seal between said two tubes and said third tube which they abut.

4,614,371
RING

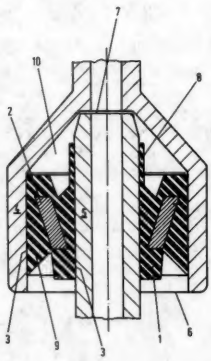
Kurt Bauder, Weinheim, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jul. 20, 1984, Ser. No. 632,716

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1983, 8322349[U]; Mar. 19, 1984, 3409982

Int. Cl.[4] F16L *21/00*

U.S. Cl. 285—231 **14 Claims**



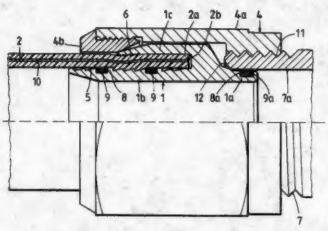
1. A ring for the leak-proof and traction-resistant coupling of the ends of two pipes having end faces and surrounding one another at a radial distance one from the other, comprising:

a basic body of an elastic material having substantially cylindrically shaped inner and outer contact surfaces which engage the pipes and having therein embedded an unyielding cone ring which is defined radially inwardly and outwardly by inner and outer cone surfaces, said cone surfaces being inclined in the same direction and individually confronting the pipes and each being at a distance from the surface of the respective confronting pipe which increasingly diminishes with increasing distance from the end face of the respective confronting pipe.

4,614,372
DEVICE FOR JOINING A PIPE AND A CONNECTION PIECE

Peter Gschwind, Stüsslingen, Switzerland, assignor to Vestol SA., Vevey, Switzerland

Filed Apr. 12, 1985, Ser. No. 722,611
Int. Cl.[4] F16L *47/00*
U.S. Cl. 285—356 **5 Claims**

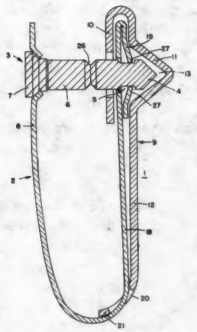


1. A device for joining a pipe to a threaded connection piece, of the type having a substantially U-shaped clamping jaw including a tail portion and first and second legs intended to straddle an end of said pipe, the surface of said tail portion intended to face the inner wall of said threaded connection piece and the surface of said first leg intended to face the inner wall of said pipe including one or more recesses, one or more O-rings respectively inserted in said recesses, and the surface of each of said first and second legs intended to face said pipe including a plurality of teeth, and a union nut to be slipped over said end of said pipe for clamping said clamping jaw to said pipe upon tightening of said union nut, wherein the improvement comprises said union nut being composed of a first part and a second part, said parts being in engagement with each other so that by tightening said first part said second part acting as an insert piece between said first part and said clamping jaw is pulled away and pressed against said second leg of said clamping jaw.

4,614,373
LOCKING SEAL AND SEAL ELEMENT THEREFOR

Halbe J. Niemeijer, Bruntinge, Netherlands, assignor to Tatoprint Nederland B.V., Netherlands

Filed Jan. 3, 1984, Ser. No. 567,759
Int. Cl.[4] B05D *33/34*
U.S. Cl. 292—318 **6 Claims**



1. A locking seal for sealing objects comprising:

a bracket (**2**) having a first limb (**8**) and a second limb (**18**) positionable in a generally parallel, spaced relationship;

a fixing pin (**3**) having at one end a punctiform end part (**4**) and having the other end (**7**) affixed on the end of said first limb (**8**) to orient the pin generally perpendicular to said spaced limbs, said fixing pin being insertable through a portion of the object to be sealed so that the portion lies between said limbs;

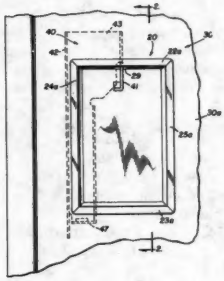
a clamping means (**19, 27**) integrally formed in the end of said second limb (**18**) for receiving and retaining said fixing pin proximate said punctiform end part (**4**), said clamping means being formed by folding over the end of said second limb to form a portion on the opposite side from said first limb, said second limb having a hole through which said fixing pin passes, said folded over end portion including means for retaining said fixing pin; and

a seal element (**1**) comprising a main plate (**9**) and a contiguous parallel lying closing plate (**10**) formed of a single piece of bent material, said seal element embracing said clamping means on either side thereof, the side edges of said seal element being joined to one another, said closing plate (**10**) having an orifice through which said fixing pin (**3**) passes when received in said clamping means, said main plate covering the punctiform end of said fixing pin when same is received in said clamping means.

4,614,374
RECESSED LATCH HOUSING

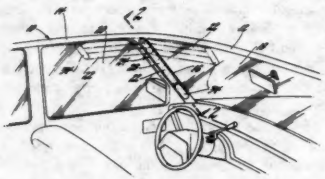
James W. Lannert, Oswego; James D. Sanders, Naperville; David K. Fowler, Aurora, and Jerry G. Love, Plainfield, all of Ill., assignors to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Feb. 21, 1984, Ser. No. 582,032
Int. Cl.[4] E05B *9/08*
U.S. Cl. 292—337 **5 Claims**



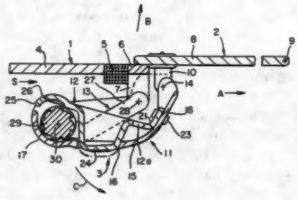
1. In a door assembly, the combination comprising a door having an opening in its front surface, a latching mechanism attached to the back side of the door, and a box-like latch housing mounted in said opening, closing said opening and defining a recess in said front surface of said door in which access is provided for said latching mechanism, said housing including a closed end defined by a back wall, and an open end defined by the edges of top and bottom walls and a pair of side walls, said housing having a peripheral flange defined by edges of its top and bottom and side walls at its open end, said flange engaging said outer surface of said door around the periphery of said opening so as to conceal said opening, said bottom wall having notches formed therein, one at each corner adjacent to its flange defining edge, the side edges of said opening in said door being received in the notches in said bottom wall, the upper edge of said opening defining a tab at the back side of said door extending rearwardly and above said opening, and said top wall having at least one upwardly extending projection which deflects and then frictionally engages behind said tab as said housing is mounted in said opening for securing said housing to said door.

4,614,375
SUN VISOR STOWED ON PILLAR
Larry D. Miller, and Thomas D. Drabik, both of Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 21, 1985, Ser. No. 789,949
Int. Cl.[4] B60J 3/00
U.S. Cl. 296—97 G 2 Claims



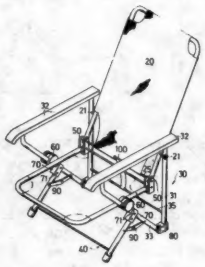
1. A sun visor for shading the eyes of the occupant of a motor vehicle having a windshield header supported by a windshield pillar and comprising:
a plurality of generally rectangular sunshade links having first and second ends;
a pivot link pivotally connected to the first ends of the sunshade links and an end connector link pivotally connected to the second ends of the sunshade links;
means mounting the pivot link on the vehicle body at the juncture of the windshield header and the windshield pillar and in generally parallel relationship with the windshield pillar so that the plurality of sunshade links are pivotal about the pivot link between a horizontal sunshading position parallel with the windshield header in which the plurality of sunshade links are established in parallel extending side-by-side relationship to define a sunshade, and a stored position parallel with the windshield pillar in which the plurality of sunshade links overlie one another to provide a relatively thin profile which does not increase the view obstructing profile of the pillar.

4,614,376
HANDLE
Jeffery A. Frampton, Begnins, Switzerland, and Nicholas Bartman, Aylesbury, England, assignors to Idex (Jersey) Limited, St. Helier, Channel Islands
Filed Feb. 7, 1984, Ser. No. 577,701
Int. Cl.[4] B60J 7/18
U.S. Cl. 296—224 9 Claims



1. A handle for permitting the stepwise opening of the rearward edge of a vehicle roof panel that is pivoted at the forward edge, said handle comprising an outer shell having a base portion with a rounded rear edge defining a shaft pivot axis and, spaced opposed side walls attached to said base portion to means for connecting the front edge of said base portion to said rearward edge of said roof panel, a ratchet structure including a pair of spaced side arms and an aperture at the front end of each of said side arms adapted to pivotally connect said ratchet structure to a vehicle roof lug, and a ratchet drum rotatably mounted between said side arms and located at said shaft pivot axis of said outer shell, and detent means for contacting said ratchet drum of said ratchet structure.

4,614,377
FOLDABLE LOUNGE CHAIR
Wun-Thong Luo, 6, Lane 10, Szu Chuan Rd., Sec 1, Pan Chiao, Taipei Hsien, Taiwan
Filed Oct. 2, 1985, Ser. No. 783,181
Int. Cl.[4] A47C 4/00
U.S. Cl. 297—19 8 Claims



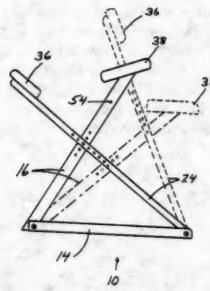
1. A foldable lounge chair comprising
a seat having a first pair of hinge means protruding from the both sides thereof, respectively;
a back having a second pair of hinge means protruding from the both sides thereof, respectively, the bottom of the back and the rear of the seat being hinged together;
a pair of armrests provided at both sides of the seat and the back, each including
a armrest plate provided on the top of each armrest, a longitudinal groove being undercut therein;
a rear supporter vertically hinged below the rear part of the armrest plate, the lower portions of the rear supporters being connected by a connecting member, the upper portion of each rear supporter provided with a axial hole means, the second pair of hinge means of the back extending through the axial holes means to thereby form a supporting point for the back;
a bevel forwarding supporter, the top thereof being slidably mounted under the front of the armrest plate and the bottom thereof being hinged together with that of the rear supporter so that the bevel forwarding supporter is arranged in a bevel way below the armrest plate;
a pair of inclination setting means slidably mounted on the pair of bevel forwarding supporters and axially fixed by the first pair of hinge means of the seat;
a "H" shaped front frame obliquely hinged to said pair of bevel forwarding supporters, respectively;
when the seat is occupied, the weight applied thereon rendering the inclination setting means against the junction of the bevel forwarding supporters and the "H" shaped front frame and staying at the lowest position thereof; when the back being applied with a force, the back, with the second pair of hinge means, automatically inclining backward gradually to a desired inclination position, and simultaneously the seat also raising gradually from its original lower horizontal position to the higher horizontal position and the inclination setting means being slid upward along the bevel forwarding supporter; when the force applied to the back is decreased and increased to the seat, the back automatically returning to its original upright position.

4,614,378

PORTABLE REVERSIBLE CHAIR APPARATUS

Ken Picou, 5508 Montview, Austin, Tex. 78756

Filed Apr. 18, 1985, Ser. No. 724,671
Int. Cl.[4] A47C *13/00*
U.S. Cl. 297—92 6 Claims



1. A portable, reversible chair comprising:

(a) a three point triangular base with caster means attached to said three point base so that said base is stable on uneven surfaces and may be easily pivoted and rotated without having to get off of and pick up said base;

(b) a single center strut with one end rotatably connected to the apex of said triangularly shaped base;

(c) a first cushion means fixedly secured to the free end of said center strut for providing support to the posterior of a user in both a conventional chair configuration and a posture chair configuration;

(d) an adjustable strut assembly with two legs that pass down either side of said center strut wherein one of said two legs is rotatably attached to one end of said triangular base opposite from said apex and wherein the other one of said two legs is rotatably attached to the other end of said triangular base opposite from said apex;

(e) a second cushion means fixedly secured to said adjustable strut assembly so that the knees of said user are supported by said second cushion means in one set of positions and the back of said user is supported by said second cushion means in another set of postions; and

(f) a means interconnecting said center strut and said adjustable strut assembly for securing said center strut and said adjustable strut assembly in a plurality of positions so that a range of conventional positions and a range of posture positions are provided for users of various heights.

4,614,379

APPARATUS FOR ROUGHENING ROAD SURFACES

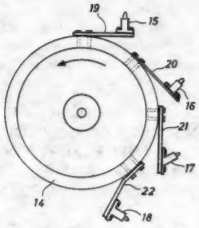
Reinhard Wirtgen, Hohner Strasse 2, 5461 Windhagen, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,039
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1982, 3232985; Dec. 13, 1982, 3246118
Int. Cl.[4] E21C *35/18*
U.S. Cl. 299—39 4 Claims

1. An apparatus for roughening road surfaces having a chassis, a roller mounted on each chassis which is vertically adjustable relative to the road and disposed transversely to the direction of travel of the chassis, a motor to drive the roller, and having milling cutters associated with said rollers the improvement consisting of

(a) rubber elastic holders which extend tangentially to the periphery of said roller at one end thereof and which carry at least one of said milling cutters at the other end thereof;

(b) means including spacer means fastening said one end of said rubber elastic holders to said outer surface of said roller, and



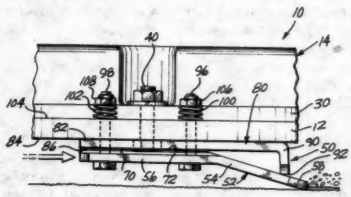
(c) means fastening the other end of said rubber elastic holders to said milling cutters.

4,614,380

POWER DRIVEN ROTARY FLOOR PREPARATION DEVICE

Larry D. Allen, Enumclaw, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 549,271, Nov. 3, 1983, abandoned. This application Feb. 5, 1985, Ser. No. 698,433
Int. Cl.[4] A47L *11/14, 13/08*
U.S. Cl. 299—41 59 Claims



1. A rotary scraper for use on a rotatable plate to remove adhering materials from concrete floors and the like, comprising:

an elongated scraper blade having leading and trailing portions,

said blade being formed at an intermediate portion so that said blade leading portion depends from the trailing portion and for extending toward the floor;

said scraper blade having hardened leading and side edges on its leading portion, the side edges trailing from the leading edge toward the trailing portion; said trailing portion having a trailing edge opposite said blade leading edge;

the side edges to extend generally in the direction of rotation, and the leading edge extending transversely to and between said side edges to extend generally transversely to the direction of rotation; said blade being elongated between the leading and trailing edges and being substantially longer between the leading and trailing edges than transversely along the leading edge; and

an elongated support plate terminating in a trailing portion formed of two generally flat parallel surfaces in two generally parallel planes, one of said surfaces extending on and above an upper surface of said blade trailing portion and terminating adjacent the blade trailing edge above the blade trailing portion, and for securing to said rotatable plate with said blade;

said support plate having a leading portion for extending over said leading portion of the blade adjacent its leading edge and having downwardly extending means adjacent

the leading edge for contact therewith for limiting upward movement of the blade leading portion and its leading edge with respect to the support plate when secured to said rotatable plate;

said trailing portions of said blade and support plate having means for receiving fasteners to secure said blade and said support plate to said rotatable plate.

4,614,381

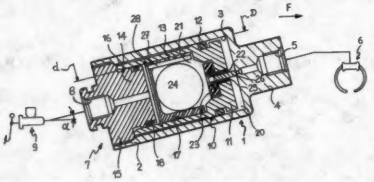
BRAKE-PRESSURE CORRECTOR SENSITIVE TO DECELERATION

Christian Riquart, Paris, and Jean-Paul Sauvée, Aubervilliers, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed May 21, 1984, Ser. No. 612,941

Int. Cl.[4] B60T *8/00*

U.S. Cl. 303—24 A **7 Claims**



1. A brake-pressure corrector sensitive to deceleration and for the hydraulic brake system of a vehicle, comprising a body in which is located a stepped piston having a small diameter surface associated with an inlet chamber formed within the body and connected to a brake-pressure emitter, and a second large diameter surface associated with an outlet chamber formed in the body and connected to at least one brake motor, the inlet and outlet chambers communicating with one another by a passage formed coaxially in the stepped piston and provided on an inlet chamber side with a seat engageable with a deceleration sensitive, freely movable inertial shut-off member disposed within the body, characterized in that the inlet chamber is partially defined by a cover mounted in the body, the stepped piston having a tubular extension part extending toward the inlet chamber and which sealingly engages a central cover projection of reduced diameter which extends longitudinally within the body and defines, together with the tubular extension part of the stepped piston, the inlet chamber, the tubular extension part and central cover projection including therebetween a seal which provides the sealing engagement therebetween, the central cover projection connected to a body part of the cover by means of a radial shoulder which extends radially outwardly and forms a return stop for the stepped piston, the return stop engageable directly with an axial end of the tubular extension part of the stepped piston, and the corrector including a stop element disposed in the passage to engage the inertial shut-off member and remove the inertial shut-off member from the seat when the stepped piston moves a predetermined distance away from the cover.

4,614,382

STRAIGHT SLIDING ROLLER BEARING

Hiroshi Teramachi, 34-8, Higashitamagawa 2-chome, Setagaya-ku, Tokyo, Japan

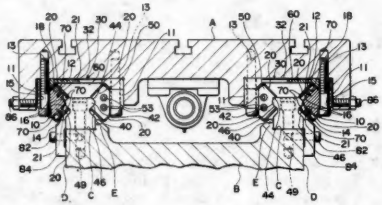
Filed Sep. 16, 1985, Ser. No. 776,265

Claims priority, application Japan, Sep. 21, 1984, 59-196536; Oct. 16, 1984, 59-215215

Int. Cl.[4] F16C *29/06*

U.S. Cl. 384—45 **7 Claims**

1. A straight sliding roller bearing comprising: a pair of sliding table halves each including an upper load bearing portion and an lower load bearing portion and formed in an inner side of a leading end of each of said load bearing portions with loaded grooves, which have rolling faces forming loaded areas of endless roller races along their axial directions, and in an outer side of the same with unloaded portions, which form endless roller races along their axial directions in a manner to correspond to said loaded grooves, such that at least one of said rolling faces is so inclined as to bear transverse load; a roof mounted over the upper faces of said sliding table halves, which are opposed at a predetermined spacing to each other, and made elastically deformable between said paired sliding table halves; two pairs of roller guides attached respectively to the leading ends of the respective load bearing portions of said respective sliding table halves and associated either with said loaded grooves or with said loaded grooves and said unloaded portions to form said endless roller races; rails having their



upper portions fitted at a predetermined spacing from each other in recesses formed by said sliding table halves and said roof, and having rolling faces facing the rolling faces of said loaded grooves which are formed in the load bearing portions of said respective sliding table halves; and a multiplicity of rollers made rollable on the respective endless roller races, which are formed respectively on the loaded portions of said respective sliding table halves, for bearing loads between the rolling faces at the sides of said sliding table halves and the rolling faces at the sides of said rails, whereby, in a pre-pressure adjusting when said roller bearing is to be attached to a carriage made movable along said rails, a gap between said sliding table halves and said rails can be adjusted by applying a transverse load to one of said sliding table halves to elastically deform said roof.

4,614,383

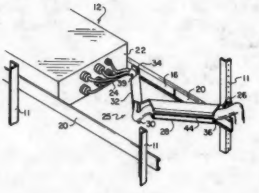
CABLE CARRIER/RETRACTOR

Bradford L. Polley, and Gary P. Priester, both of San Diego, Calif., assignors to General Dynamics, Electronics Division, San Diego, Calif.

Filed Dec. 31, 1984, Ser. No. 687,957

Int. Cl.[4] A47B *81/00*; H01B *7/06*; H05K *7/16*

U.S. Cl. 312—273 **2 Claims**



1. In a cabinet including a framework having a drawer therein, and a cable extending from said drawer to the rear of said framework, said cable being of a length substantially greater than the distance between the rear of said drawer and the rear of said framework, a device for supporting said cable in a substantially horizontal configuration from an entry position adjacent said framework to the rear of said drawer, to an

exit position adjacent the rear of said drawer, said device comprising:

a mounting hinge for mounting on said frame to the rear of said drawer for connecting an entry end of a first channel to said frame;

a first channel for supporting said cable from said entry position adjacent said framework to the rear of said drawer to an intermediate position, said first channel comprising:

an entry end; and

a second end;

a connecting hinge connecting said second end of said first channel with a first end of a second channel;

a second channel for supporting said cable from said intermediate position to said exit position adjacent the rear of said drawer, said second channel comprising:

a first end; and

an exit end for positioning adjacent the rear of said drawer; and

a retaining hinge connected to said drawer and to said exit end of said second channel for retaining said exit end adjacent the rear of said drawer; and wherein

said first and second channels have a horizontal width and have walls defining a continuous orifice along a length of said channel for insertion and removal of said cable, said walls for supporting and retaining said cable within said channel; and wherein

said connecting hinge is under center between said mounting hinge and said retaining hinge, said connecting hinge being located approximately mid-width of the channel, and wherein said channels are vertically offset relative to one another on said connecting hinge whereby, in a fully retracted position, said channels may attain a top-to-bottom relationship in a plane perpendicular to the direction of drawer travel, and, when said drawer is moved forward and said channels are in a fully extended position, said channels may attain a substantially linear relationship in a substantially horizontal plane.

4,614,384

ELECTRONIC CASH REGISTER

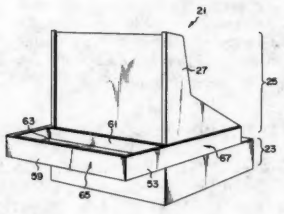
Akira Takano, Sagamihara; Yutaka Mizuno, Tokyo; Hiroyuki Ishikawa, Tokyo, and Yoshiaki Honjo, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1984, Ser. No. 670,549

Claims priority, application Japan, Nov. 18, 1983, 58-216288

Int. Cl.⁴ A47B *81/00*

U.S. Cl. 312—281 **14 Claims**



1. An electronic cash register, comprising:

an electronic cash register main body having a back side arranged to face toward a customer making a payment to be registered; and

supporting means, protruding from the back side of said electronic cash register main body, for supporting articles thereon to be sold and for displaying the articles to the customer.

4,614,385

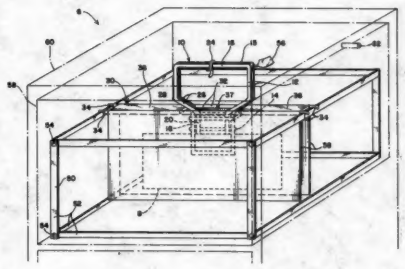
CIRCUIT BOARD STORAGE APPARATUS

Robert A. Gendernalik, 2747 Union Ave., San Jose, Calif. 95124

Filed Dec. 10, 1984, Ser. No. 679,892

Int. Cl.⁴ A47B *63/00*; H05K *7/16*

U.S. Cl. 312—320 **18 Claims**



1. A printed circuit board storage system apparatus adapted for providing high density circuit board storage, comprising:

a board enclosure structure for protecting the circuit boards during storage;

a clamping mechanism contained therein to hold the board in place within the board enclosure structure; and

wherein the clamping mechanism is located such that a wide variety of sizes and shapes of boards are adapted to be stored in an unhindered manner within the enclosure structure, wherein,

wherein, the clamping mechanism consists only of two jaw/-handle members joined by a hinge pin with no spring-like mechanism being included.

4,614,386

ADAPTOR FOR CHANGING THE PITCH OF A CONTACT ARRAY USED WITH A PRINTED CIRCUIT BOARD TESTING APPARATUS

Hubert Driller, and Paul Mang, both of Schmitten, Fed. Rep. of Germany, assignors to Mania Elektronik Automatisation Entwicklung und Gerätebau GmbH, Schmitten, Fed. Rep. of Germany

Filed Nov. 7, 1984, Ser. No. 669,309

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1983, 3340179

Int. Cl.⁴ G01R *31/02*; H01R *9/09*

U.S. Cl. 339—17 M **19 Claims**

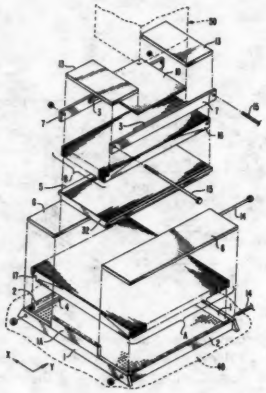
1. An apparatus for changing the contact pitch of a contact array from a first density to a contact array of a second density in order to electrically interconnect a pair of electrical circuit devices having contact arrays corresponding to the first and second densities, said apparatus comprising:

a first plurality of cards arranged in parallel with each other, each said card having two opposite parallel longitunal edges, each card having thereon a row of contacts of which the mutual spacing on one longitudinal edge corresponds to the pitch of one of said arrays and the mutual spacing on the other longitudinal edge corresponds to the pitch of the other one of said arrays, with the associated contacts along the two longitudinal edges being connected by conductors extending across said cards;

a second plurality of cards arranged in parallel with each other, each said card of the second plurality having two opposite parallel longitudnal edges, each card of the second plurality having thereon a row of contacts of which the mutual spacing on one longitudinal edge corresponds to the pitch of one of said arrays and the mutual spacing on the other longitudinal edge corresponds to the pitch of the other one of said arrays, with the associated contacts

along the two longitudinal edges being connected by conductors extending across said cards;

said cards of said second plurality being disposed facing said first plurality of cards and at an angle to said first plurality; and



means electrically interconnecting contacts of the first plurality of cards to associated contacts of the second plurality of cards.

4,614,387

CONNECTING ELEMENT FOR CHIP CARRIERS

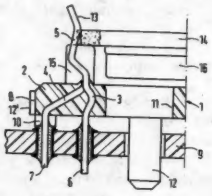
Walter Hartl, Winnenden, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 445,627, Nov. 30, 1982, abandoned. This application Apr. 26, 1985, Ser. No. 728,144

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148018

Int. Cl.[4] H05K *1/00*

U.S. Cl. 339—17 CF **1 Claim**



1. A connecting element having an insulating frame in which electric contact elements having upright spring legs are mounted, for plate-shaped chip carriers having terminal pads at the edge of the plate which end at the outer narrow sides of the chip carrier, and against the sides of which said upright spring legs of said electric contact elements which are mounted in said insulting frame of the connecting element are caused to rest, and wherein the connecting ends, which protrude from the frame at the underside, are adapted to be connected to a printed circuit board, comprising:

contact elements including lenghts of wire which are firmly embedded in said insulating frame and including spring legs having end portions which are bent back toward the outside of said frame, to form a funnel-shaped portion for inserting said chip carrier and to deflect said spring legs when a chip carrier is inserted into the connecting element; such that a first bend below the end portion is adapted to engage one of the recesses in the outer narrow sides of the chip carrier, and whereby the spring legs are positioned to be joined to the terminal pads in the recesses by soldering.

4,614,388

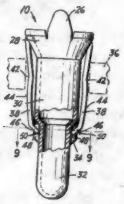
CONNECTOR SOCKET FOR PRINTED CIRCUIT BOARDS

Francis R. Powell, Naugatuck, Conn., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 681,138, Dec. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 475,932, Mar. 16, 1983, abandoned. This application Jan. 15, 1986, Ser. No. 818,906

Int. Cl.[4] H01R *9/09, 13/74, 13/434, 13/187*

U.S. Cl. 339—17 C **11 Claims**



1. An electrical connector receptacle for insertion in an opening of a circuit board for electrical engagement with a pin terminal, comprising:

a tubular metal member having a first section, a second section and a third section, said first section defining an enclosed tip, said second section defining a body of larger diameter than said first section, said third section defining a flared end constituting a stop engageable with the circuit board after the tubular metal member has been inserted in the opening in the circuit board, said flared end also defining a mouth, a beveled shoulder extending between said first and second sections, recess means in said beveled shoulder;

a spring contactor member disposed within said tubular metal member for electrical engagement with the pin terminal;

retainer spring means integral with said third section and extending exteriorly of and along said tubular metal member and having a bowed section for springably engaging a wall defining the opening of the circuit board to retain the receptacle within the opening and an inwardly-turned free end terminating within said recess means so that said inwardly-turned free end is moveable along said recess means and prevented from catching on the circuit board during insertion of the receptacle within the opening.

4,614,389

CIRCUIT BOARD ASSEMBLY FOR ACCURATE INSERTION

William G. Albert, Haverhill; Gerald G. Astell, Methuen; Anthony G. Favale, and Leon H. Steiff, both of Peabody, all of Mass., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 17, 1985, Ser. No. 745,698

Int. Cl.[4] H01R *13/62*

U.S. Cl. 339—45 M **10 Claims**

1. A system for accurately inserting a circuit board into a socket in an equipment frame comprising:

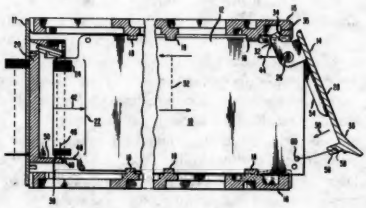
a socket in said equipment frame said socket having a vertical slot;

a circuit board having a contact section including an electrical contact field for insertion into said socket slot;

upper and lower horizontal channels in said equipment frame for holding said circuit board in a vertical plane and guiding said circuit board toward said socket slot,

said lower channel having a support surface for supporting the bottom edge of said circuit board as it is being guided toward said slot;

a lever arrangement rotatably attached to said circuit board at a pivot point,



said lever arrangement having a first arm for application of a force to rotate said lever, and

a second arm for engaging said frame to translate lever rotation force of a first sense applied to said first arm into insertion force active at said pivot point to overcome insertion resistance force applied to said contact section by said socket;

CHARACTERIZED IN THAT

the lower end of said slot is fixed a first predetermined height above said support surface to form a socket reference surface;

the bottom edge surface of said contact section is a second predetermined height above the bottom edge surface of said board to form a board reference surface;

said first predetermined height is at least as large as said second predetermined height; and

said pivot point is located with respect to said contact section such that said insertion force forms a moment couple with said insertion resistance force

said moment couple holding said board reference surface down against said socket reference surface during insertion.

4,614,390

LEAD SEALING ASSEMBLY

Robert W. Baker, Harrow, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 17, 1985, Ser. No. 735,427

Claims priority, application United Kingdom, Dec. 12, 1984, 8431301

Int. Cl.[4] H01R *11/00*

U.S. Cl. 339—61 R **5 Claims**

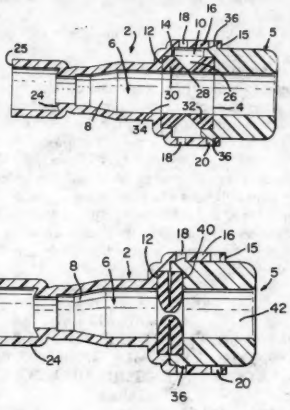
1. An electrical lead sealing assembly comprising:

an insulating housing having a wall defining a cavity for receiving an electrical terminal connected to an end of an electrical lead;

an elastomeric, substantially dumbell shaped, annular sealing member in the cavity, through which member the terminal and the lead can freely be passed so that the lead extends through the sealing member, the sealing member having an external peripheral recess so as to be collapsible under compression in its axial direction;

an annular cap through which the terminal and the lead can also freely be passed, the cap being movable into the housing from an outer position therein into a home position in the housing axially to compress the sealing member thereby to collapse the sealing member to form a seal between the lead and the housing; and

means for retaining the cap in its home position, the cap having a skirt surrounding one end of the sealing member,



the other end of the sealing member engaging a shoulder in the housing.

4,614,391

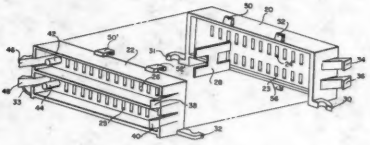
H-TERMINAL ASSEMBLY

Edward J. Baader, 4220 Springfield-Jamestown Rd., Springfield, Ohio 45502

Filed Apr. 24, 1985, Ser. No. 726,556

Int. Cl.[4] H01R *13/627*

U.S. Cl. 339—91 R **5 Claims**



1. An H-terminal assembly for electrical wiring systems of the type employing pronged H-terminals comprising:

a. a plurality of flat H-terminals having top and bottom prongs;

b. a top section of insulating material defining a planar base with a plurality of aligned holes which register with the H-terminal top prongs, said top section further including:

i. a plurality of resilient bayonet prongs extending upwardly from said planar base so as to engage a terminal connector head, and

ii. at least one elongated key post extending upwardly from said planar base for registration with a terminal connector head;

iii. side walls extending above and below said top section planar base, together with a plurality of lugs extending laterally from the bottom of said side walls

c. a bottom section of insulating material defining a planar base with a plurality of aligned holes which register with the H-terminal bottom prongs, said bottom section being snap-fitted to said top section, such that the pluralities of holes in said top section and bottom section register with each other as a support for said H-terminals, said bottom section further including:

i. a plurality of bayonet prongs extending downwardly

from said bottom section base, so as to engage a terminal connector head; and

ii. at least one elongated key post extending downwardly from said planar base, for registration with a connector head;

iii. a plurality of bracket members extending upwardly from said planar base, so as to engage said laterally extending lugs in said top section.

d. at least two electrical terminal connector heads of insulating material each defining a plurality of electrical connector concavities, providing for connector registration with aligned H-terminal prongs, extending from the planar surface of said top and bottom sections and each said connector head having elongated keyholes complementally engaging said key posts whereby upon registry of the keyposts with the keyholes, the connector heads receive the bayonet prongs, such that each connector head is snap-fitted onto the planar base respectively of said top section and said bottom section.

4,614,392

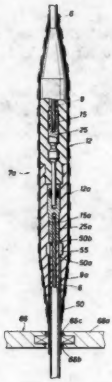
WELL BORE ELECTRIC PUMP POWER CABLE CONNECTOR FOR MULTIPLE INDIVIDUAL, INSULATED CONDUCTORS OF A PUMP POWER CABLE

Boyd B. Moore, 427 Mignon, Houston, Tex. 77024

Filed Jan. 15, 1985, Ser. No. 691,550

Int. Cl.[4] H01R *4/00*

U.S. Cl. 339—94 R **2 Claims**



1. A field application connector for slidably positioning over the insulated ends of individual electric conductors to connect the noninsulated ends of each individual conductor of a multiple electric conductor power cable wherein at least one end of each of the individual insulated conductors is enclosed in an impervious, pressure tight tube, the connector comprising:

an elastomer male boot for slidably receiving one of the ends of an individual insulated electric conductor of the power cable;

an elastomer female boot for slidably receiving the other end of the individual insulated electric conductor of the power cable;

each of said boots having:

a longitudinally extending body portion with each boot having tapered outer end surfaces extending from the longitudinal body portion downwardly to the insulated electrical conductor received therein;

a central longitudinal passage therethrough formed by a plurality of longitudinally extending, axially aligned, longitudinal passage portions with adjacent passage portions having different internal diameters to thereby form retaining shoulder means spaced longitudinally in the central passage at the juncture of adjacent passage portions;

said longitudinal passage portions which extend axially of the tapered outer end surfaces of each male and female boot having an inner diameter which is less than the outer diameter of the insulated electric conductor for sealing therebetween when the insulated electric conductor is extended, respectively, into the central passage of each the male and female boot;

annular longitudinally extending seal surfaces engageable when said male boot is inserted in said female boot to seal therebetween; and

cooperating stop surface means and lock surface means engageable when said male boot and female boot are in mated, sealing relationship;

a male electric conductor contact pin member to engage the noninsulated end extending from the one end of the insulated electric conductor and positionable in the central passage of said male boot to seal and secure the insulated conductor in said male boot against withdrawal from the male boot due to well bore pressure;

said male electric conductor contact member pin having:

a plurality of longitudinal outer surface portions with adjacent outer surface portions being of different diameter to form shoulder means on said male electric conductor contact pin member whereby said outer surface portions and shoulder means on said male electric conductor contact pin member mate with said longitudinal passage portions and shoulder means of said male boot to retain and seal said male electric conductor contact pin member in said male boot; and

an end portion projecting beyond said male boot;

an electric conductor female socket member to engage the noninsulated end extending from the other end of the insulated electric conductor and positionable in the central passage of said female boot to seal and secure the insulated conductor in said female boot against withdrawal from the female boot due to well bore pressure;

said electric conductor female socket member having:

a plurality of longitudinal outer surface portions with adjacent outer surface portions being of different diameter to form shoulder means on said electric conductor female socket member whereby said outer surface portions and shoulder means on said electric conductor female socket member mate with said longitudinal passage portions and shoulder means of said female boot to retain said electric conductor female socket member in said female boot; and

a longitudinal passage to receive said end portion of said electric conductor male contact pin member in electric conducting relationship with said electric conductor female socket member;

said electric conductor male contact pin member and said electric conductor female socket member each including a longitudinal opening in one end for receiving the noninsulated ends of the insulated electric conductors, and said electric conductor male contact pin member and said electric conductor female socket member each have a deformable portion for crimping to engage the noninsulated conductor ends;

a protective covering enclosing said male and female boots to inhibit expansion thereof in well bore fluids and thereby increase the sealing effect between said male and female boots and insulated conductor therein and between said mated male and female boots; and

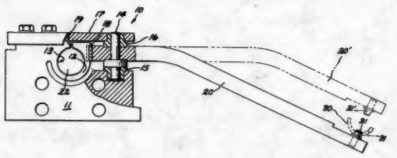
a tubular insulating nonconductor positioned between the end of the impervious tube and said electric conductor member secured to the adjacent noninsulated conductor end.

4,614,393

RETRACTABLE LEAD SYSTEM FOR OPERATION AT CRYOGENIC TEMPERATURES

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,330
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—95 R 16 Claims



1. An electrical contact clamp for operation at cryogenic temperatures, said clamp comprising:

a conductive metal ring having a gap in its periphery, the radially inner portion of said ring having a serrated surface;

a mounting block to which said split ring is attached, said point of attachment being proximal to one side of said gap;

a pivoting cam lever disposed so that the pivoting motion of said lever urges the cam of said lever against said gapped ring so as to tend to close said gap; and

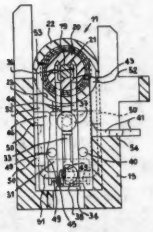
a push block disposed between said ring and said cam lever.

4,614,394

DEVICE FOR CONNECTING A LOGIC CIRCUIT TO A COAXIAL CABLE

Cesare Chelin, Caluso, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Nov. 28, 1984, Ser. No. 675,851
Claims priority, application Italy, Nov. 28, 1983, 68247 A/83; Aug. 29, 1984, 67859 A/84
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—97 P 14 Claims



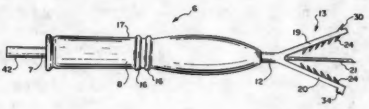
1. A device for connecting a logic circuit to a coaxial cable having a center conductor, a screening conductor and an insulation layer between said center conductor and said screening conductor, said device including a frame mounting a support for said logic circuit, a fixed jaw secured to said frame and having a partially cylindrical seat for said cable, a pair of insulation-piercing parallel needles located in said seat in a plane perpendicular to the axis of said cable and electrically connected to said logic circuit, said needles being spaced by a distance corresponding to the diameter of said center conductor, a complementary jaw guided on said frame for movement relative to said fixed jaw, and snap-over means manually operable for causing said complementary jaw to force said cable on said needles to cause said needles to pierce said screening conductor and said insulation layer and to contact said center conductor, said needles having an insulated middle portion to extend when in use through said screening conductor.

4,614,395

QUICK CONNECTOR TO MEDICAL ELECTRICAL LEAD

Charles A. Peers-Trevarton, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 4, 1985, Ser. No. 720,284
Int. Cl.[4] H01R *11/20*
U.S. Cl. 339—97 R 29 Claims



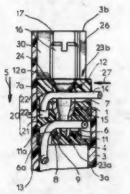
1. A quick connector for a neural stimulator lead or a cardiac pacing lead including: a rod-type extension, an elastomeric sleeve slidably mounted on said rod-type extension, a tube mounted in permanent assembly with one end of said rod-type extension, the tube being split at an outer end to provide a pair of jaw-like tube segments which extend in divergent relation when in an open position, each of the segments having a series of longitudinally spaced rearwardly extending barbs, a guide wire having an axially inner end co-axially embedded in said extension and an axially outer end projecting axially outwardly between said diverging jaw-like tube segments, and one end of a medical electrical lead being co-axially mounted over the guide wire, the lead having a tubular insulation sheath and axially spaced coils of a coiled conductor within the sheath and being positioned between the diverging jaw-like tube segments in radially disposed relation to the barbs, the rod-type extension and the elastomeric sleeve being axially movable relative to one another and operable to cause the diverging jaw-like tube segments to move radially inwardly into a closed position and to cause the barbs carried on the thus moved segments to become embedded in the coiled conductor for locking the medical electrical lead in fixed assembly with said rod-type extension.

4,614,396

ELECTRICAL CONNECTION DEVICES

Yves Saligny, Cluses, France, assignor to Carpano & Pons, France

Filed Feb. 8, 1984, Ser. No. 578,203
Claims priority, application France, Feb. 15, 1983, 83 02888
Int. Cl.[4] H01R *4/24*
U.S. Cl. 339—97 P 19 Claims



1. An electrical connection device, comprising:

an electrically insulating support;

at least one tubular, electrically conductive connection member mounted on the insulating support and axially movable with respect thereto;

the at least one connection member including a first end part, and a second end part opposite the first end part;

the first end part having formed therein a first transverse slot;

the second end part having formed therein a second transverse slot;

each of the first and second transverse slots being adapted to self-strip and receive an electrical cable;

the insulating support having formed therein a passage disposed to face at least the second transverse slot and adapted to receive an electrical cable;

means for axially guiding the at least one connection member during relative movement of the at least one member and the insulating support; and

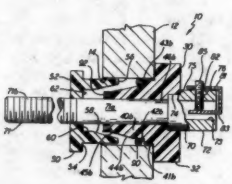
means for moving the at least one connection member relative to the insulating support from a first position to a second position to allow the at least one connection member to engage an electrical cable received by the passage, the moving means being engageable; with the insulating support to effect movement of the at least one conductive connection member and to effect engagement of the at least one connection member with an electrical cable received by said passage, the moving means being selectively removable from engagement with the insulating support to allow at least one other conductive connection member to be mounted on the insulating support.

4,614,397

TERMINAL PLATE ASSEMBLY

Paul J. Flanigan, Clay, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 16, 1985, Ser. No. 809,620
Int. Cl.[4] H01B *17/30*
U.S. Cl. 339—132 B **6 Claims**



1. A terminal plate assembly comprising:

(I) an inner terminal block including:

(a) a generally flat elongated portion;

(b) three equally spaced projections extending from one side of said flat elongated portion and each serially including a first cylindrical portion having a first diameter, a second cylindrical portion having a second diameter which is less than and first diameter with said first and second cylindrical portions together defining a flange, a frustum of a cone, an axial bore extending through said frustum, said first and second cylindrical portions and said flat elongated portion;

(c) three equally spaced holes in the other side of said flat elongated portion with each of said holes being only a portion of a circle and serving as a counterbore for a corresponding one of said axial bores;

(II) a plurality of outer terminal blocks each including:

(a) an outer cylindrical portion having said first diameter and terminating in a flat annular portion;

(b) a recess defined by a conical portion extending from said flat annular portion and being of mating configuration to said frustum and an inner cylindrical portion terminating in an annular end wall which forms an extension of a corresponding one of said axial bores in an assembled terminal plate assembly;

(III) a plurality of pins each including:

(a) a body portion including an unthreaded portion and a threaded portion for securing to a power source;

(b) a head portion for securing to a motor lead;

(c) a portion of said head portion being shaped so as to be matingly received in a corresponding one of said three equally spaced holes whereby a pin extends through said axial bore and one of said outer terminal blocks can be placed thereon so that said pin extends through said extension of said bore;

(IV) first O-ring means adapted to be placed on each said second cylindrical portion and to be squeezingly engaged in a sealing engagement between said flange and said flat annular portion;

(V) second O-ring means adapted to be placed on each said unthreaded portion of said pin and to be squeezingly engaged between the end of said frustum and said annular end wall;

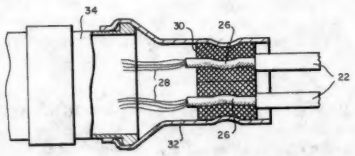
(VI) a plurality of nuts for threadably engaging said threaded portions of each of said pins to cause said inner and outer terminal blocks to come together and thereby squeezingly engage said first and second O-ring means in a sealing engagement and to cause said first O-ring to be radially extruded to thereby additionally secure said inner and outer terminal blocks in place with respect to a surrounding structure.

4,614,398

SHIELDED CABLE TERMINAL CONNECTION

James R. Wright, Guilford, and Ronald B. Huggins, Norwich, both of N.Y., assignors to Simmonds Precision, Tarrytown, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,693
Int. Cl.[4] H01R *13/46*
U.S. Cl. 339—143 R **7 Claims**



1. A non-threadable shield terminal connector apparatus for eliminating EMI leakage comprising,

at least one coaxial cable having an exposed shield portion,

a generally tubular backshell housing having generally smooth exterior and interior surfaces for containing said shield portion,

a resilient bushing of conductive material contiguously surrounding said shield portion and radially extending to the interior surface of said backshell housing, whereby the space between the shield portion of said cable and the adjacent interior surface of said backshell housing is completely filled by said resilient bushing, and

said backshell housing having a rim surrounding said resilient bushing and said coaxial cable, at least a portion of said rim being plastically deformed toward said coaxial cable

for retention of said resilient bushing.

4,614,399

AERIAL DROP WIRE SPLICER

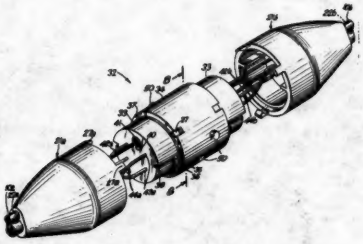
Richard J. Gemra, Union, and Manuel Martinez, New Providence, both of N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jul. 23, 1984, Ser. No. 633,325
Int. Cl.[4] H01R *13/502*
U.S. Cl. 339—205 **6 Claims**

1. A splicing device for electrical conductors comprising:

(a) an insulative central body having formed therein a plurality of conductor-receiving guide holes adapted to receive therein electrical conductors, said guide holes extending from opposing ends of said central body inwardly and lengthwise through said central body, in radially spaced relation along a common radius of said body, reaching into and continuing through cavities which extend radially into said body from its outer surface transverse to the axis of said guide holes such that a pair of guide holes, one

from each end of said body, extend through a single cavity in a manner that positions one guide hole in radially spaced relation from the other guide hole, each cavity being formed to receive therein means for splicing said conductors in said cavity, said means comprising a button-blade terminal having an insulative body with a two-tine electrically conductive terminal blade at its front, the tines being spaced by a gap and having respective cutting edges on their interior sides, each button-blade terminal having formed on the surface of its insulative body, a convex ridge shaped to fit into a concave recess on the wall of



each cavity and enabling said buttons to self-lock into said cavity when inserted therein; and

(b) a pair of spaced insulative end caps having apertures therein for passage therethrough of said conductors and a plurality of mating locking means on said end caps adapted to engage opposite ends of said central body so as to be secured thereto, said end caps being provided with a hollowed-out region for accommodating excess lengths of conductor which may be present during assembly of the device, and wherein said splicing means are insertable in said central body subsequent to securing said end caps to said body.

4,614,400

WINDING CONTACT WITH ROTARY FASTENING FOR INSERTION INTO A CONTACT HOUSING HOLE WITH CIRCULAR CROSS SECTION

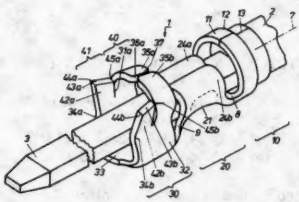
Hans-Jürgen Tesch, Oberägeri, Switzerland, assignor to CDM Connectors Development & Mftg. AG, Cham, Switzerland

Continuation of Ser. No. 433,207, Sep. 29, 1982, abandoned. This application Apr. 25, 1985, Ser. No. 727,087

Claims priority, application Switzerland, Feb. 10, 1981, 870/81

Int. Cl.[4] H01R *4/24*

U.S. Cl. 339—220 R **9 Claims**



1. A winding contact element which can be securely positioned in a cylindrical hole of a contact housing made of an electrically-insulating plastic material, said winding contact element including an elongated contact casing made of flexible metal and a winding post extending therewithin, said contact casing defining a hollow safety section at one end thereof, said hollow safety section including

a base;

opposite side walls extending upwardly from said base, said side walls curving towards one another to respective flared indentation lines;

a centering flap and a separate clamping arm extending upwardly from each opposite side wall, each centering flap and each clamping arm defining opposite side edges and a top edge, the centering flaps extending upwardly from the respective flared indentation lines to first curve gradually away from one another and then curve towards one another so as to define a longitudinal joint between the top edges thereof, the external surfaces of said centering flaps adjacent said longitudinal joint forming a conic surface whose diameter increases in the axial direction towards said clamping arms; said clamping arms extending upwardly from the respective flared indentation lines to curve away from one another such that first corners of said respective clamping arms, which corners are located at the intersection of the top edges and the side edges nearest the adjacent centering flaps, are located closer to one another than the second corners thereof, which are located at the intersection of the top edges and the side edges furthest from the adjacent centering flaps, said second corners being normally located outside the maximum periphery associated with said conic surface defined by said external surfaces of said centering flaps;

said longitudinal joint between the top edges of said centering flaps becoming closed as the conic surfaces thereof are contacted by the cylindrical hole of the contact housing as the winding contact is gradually inserted in the cylindrical hole, said flared indentation lines concurrently being resiliently moved towards one another, said movement causing the second corners of said clamping arms to resiliently move towards one another, thus enabling said winding contact to be fully inserted in said cylindrical hole with a minimum of damage to said hole by the second corners of said clamping arms, said clamping arms thereafter preventing said winding contact from being rotated within said cylindrical hole due to abutment of the second corners thereof against the wall of said cylindrical hole.

4,614,401

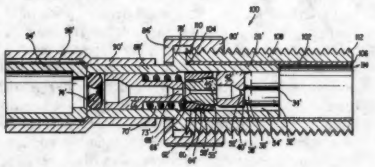
OPTICAL FIBER CONNECTOR

Ross W. Strait, Jr., Madison, Conn., assignor to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jun. 10, 1983, Ser. No. 503,165

Int. Cl.[4] G02B *6/38*

U.S. Cl. 350—96.21 **7 Claims**



1. A connector for coupling the ends of two lengths of optical fiber in contiguous, aligned position comprising two connector assemblies, each connector assembly comprising:

(a) a three-pin sub-assembly comprising three like-size, generally cylindrical, rigid pins extending parallel to each other in contiguous relationship, said pins having a diameter such that an inscribed circle extending tangent to the pin circumferences in the interior space between the pins substantially corresponds to the diameter of a length of optical fiber;

(b) first retaining means for securely retaining the pins of the sub-assembly in contiguous relationship, the interior space

extending between the circumferences of the pins defining a chamber for receiving a length of optical fiber;

(c) second retaining means for providing a stress relieving space for the optical fiber adjacent to the distal end of the three-pin sub-assembly;

(d) spring-loaded retaining means for securing an optical fiber within the chamber defined by the three pins of the sub-assembly by exertion of a radial compressive force on said optical fiber; and

(e) coupling means for connecting the connector assembly to its mating connector assembly.

4,614,402

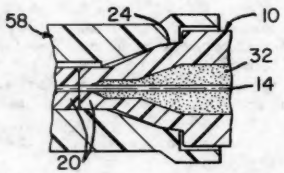
FIBER OPTIC CONNECTOR AND METHOD OF TERMINATING FIBER OPTIC TRANSMISSION MEMBERS

Bernard G. Caron, Harrisburg, and Ronald F. Cooper, Orrtanna, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 501,599, Jun. 6, 1983. This application Jan. 23, 1986, Ser. No. 821,869

Int. Cl.[4] G02B *6/38*

U.S. Cl. 350—96.21 **6 Claims**



1. A fiber optic connector for connecting two fiber optic transmission members together, comprising:

a rigid housing having a profiled bore extending therethrough, said bore having an inner cylindrical surface, a tapered surface extending outwardly from said inner cylindrical surface and a support surface at an outer end of said tapered surface;

a separate ferrule of resiliently rigid but deformable material terminated onto an end of each fiber optic transmission member each having a profiled front end including a front surface, a front cylindrical section, a tapered section, and a support section, said front surfaces being substantially flat with a front end of each fiber optic transmission member being coincident with a corresponding flat front surface, each said front surface having a peripheral surface at an angle therefrom extending to an external surface of said front cylindrical section, said front cylindrical section being slightly greater in diameter than the diameter of said inner cylindrical surface, said tapered section being slightly smaller in dimension than said tapered surface and said support section being slightly larger in dimension than said support surface, said profiled front ends of said ferrules being disposed in said profiled bore with said front cylindrical sections tightly engaging said inner cylindrical surface causing a reduction in diameter of said front cylindrical sections and centering and axially aligning the fiber optic transmission members, said tapered sections disposed along said tapered surfaces and said support sections tightly and sealingly engaging said support surfaces thereby supporting said ferrules against lateral forces thereon;

index-matching fluid disposed between both said front surfaces and said housing; and

coupling means for engaging both said ferrules and urging said profiled front ends thereof both into said profiled bore causing both said front surfaces to at least nearly engage each other with the peripheral surfaces thereof forming a reservoir surrounding the front ends of both said ferrules within said inner cylindrical surface, whereby said index-matching fluid disposed between both said front surfaces is expandable into said reservoir at high temperatures.

4,614,403

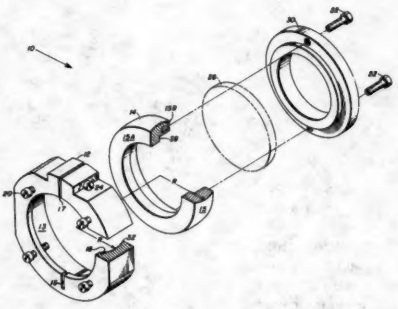
SPHERICAL SECTION OPTICAL MOUNT

Gerard M. Kersten, Ridgecrest, Calif., and Ronald A. Ferrante, Cambridge, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1983, Ser. No. 510,025

Int. Cl.[4] G02B *7/02*

U.S. Cl. 350—252 **1 Claim**



1. An optical mount comprising:

an inner ring having an outer surface which is a section of a sphere defined by a pair of planes spaced oppositely of the center of said sphere;

means for mounting an optical element within the inner ring;

an outer ring having the inner ring pivotally received therein and having an inner surface which is a spherical section conforming to said outer surface and is pivotally received therein;

means for pivoting the inner ring to a selected position in relation to said outer ring by relative movement between said rings along said outer surface and said inner surface, said pivoting means having

an annular lip mounted on the outer ring and extended inwardly from said inner surface thereof in axially spaced relation to one side of the inner ring, and

a plurality of elements screwthreadably engaged with said lip and circumferentially spaced thereabout, said elements being extended from said lip into engagement with said one side; and

means for releasably retaining the inner ring in a selected such position.

4,614,404

ELECTRICALLY AND MANUALLY OPERATED MIRROR

Laverne Greene, and George Spector, both of 233 Broadway, RM 3615, New York, N.Y. 10007

Filed May 24, 1984, Ser. No. 613,793

Int. Cl.[4] B60R *1/04*; G02B *17/00*

U.S. Cl. 350—280 **5 Claims**

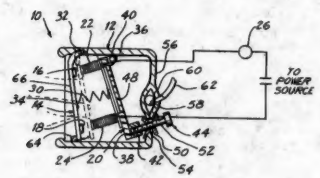
1. An electrically and manually controlled rear view mirror which comprises:

(a) a housing mounted to the exterior of a motor vehicle, said housing designed to permit manual adjustment of its angular position with respect to driver's eyes;

(b) a mirror spring biased to a first position supported pivotally by the housing for pivotable motion between said first position and a predetermined second operating position to provide high and low brightness images;

(c) an adjustable plate mounted on said housing spaced from said mirror;

(d) magnetic means mounted on said mirror and plate for moving said mirror towards said plate towards said second position in opposition to said spring bias, said means including a solenoid and a coacting magnet; and



(e) a switch mounted within the motor vehicle and connected to energize the solenoid by manual operation of the driver causing the pivotable motion of the mirror from one to the other of the operating positions by virtue of said magnetic means working in opposition to said spring bias.

4,614,405

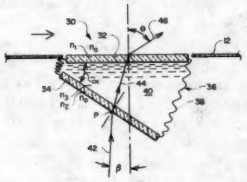
WIDE ANGLE LASER WINDOW

Werner M. Brandenberg, and Denis J. Pistoresi, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1982, Ser. No. 425,457

Int. Cl.[4] G02B *5/06, 3/12*

U.S. Cl. 350—286 **20 Claims**



1. A wide angle laser window particularly adapted to be mounted to an aircraft to direct coherent radiation from the aircraft to a distant point or from the distant point to the aircraft along paths that vary angularly relative to the aircraft, wherein the aircraft has an outer skin portion defining an aerodynamically contoured aircraft surface, said window comprising:

a. a first outer beam transmissive window panel which has an index of refraction of n_1 and which has an outer surface that is in an aerodynamically aligned position at the aerodynamically contoured aircraft surface so as to blend aerodynamically with said aircraft surface, said first panel being mounted to the aircraft in a manner that the outer surface of the first panel remains in its aerodynamically aligned position during operation of the window to direct or receive said radiation along paths of differing angularity of alignment,

b. a second beam transmissive window panel having an index of refraction n_2 and positioned inwardly of, and in general alignment with, said first panel, said second panel being pivotally mounted relative to the first panel so as to be able to change its angular relationship relative to the first panel and thus change angle of alignment of a beam passing to or from said first panel,

c. flexible seal means joining said first and second panels to define a fluid cell therebetween and to contain therein a beam transmissive fluid having an index of refraction n_3,

d. said indices of refraction n_1, n_2 and n_3 being substantially matched for generally undegraded transmission of a continuous beam of coherent radiation across the skin of the aircraft.

4,614,406

LIQUID CRYSTAL DISPLAY DEVICE

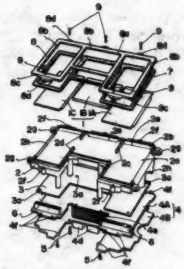
Etsuo Motoi, Mishima, Japan, assignor to Nippon Seiki Co. Ltd., Niigata, Japan

Continuation-in-part of Ser. No. 424,555, Sep. 27, 1982, abandoned. This application Jun. 4, 1985, Ser. No. 741,186

Claims priority, application Japan, May 31, 1982, 57-93379

Int. Cl.[4] G02F *1/13*; G08B *5/36*

U.S. Cl. 350—334 **6 Claims**



1. A liquid crystal display device comprising

a generally planar light guiding member having a mounting surface on the front side, a means for positioning and mounting on the back side and a light accepting means, said light guiding member being so structured that light entering through said light accepting means is projected toward said mounting surface,

a liquid crystal display element mounted directly on said mounting surface,

a holder with ribs, said holder being secured on said light guiding member and adapted to hold said liquid crystal display element from the front side thereof, said ribs protrudingly formed on said mounting surface and being adapted to be in contact sideways with and position said liquid crystal display element,

a circuit board with electronic components electrically connected to said liquid crystal display element for controlling the display thereof, said circuit board being mounted on said light guiding member by said means for positioning and mounting, and

a reflector means disposed between said light guiding member and said circuit board, said reflector means being adapted to reflect light entering said light guiding member through said light accepting means into the frontal direction.

4,614,407

ELECTROOPTICAL DEVICE HAVING FIXED TRANSLUCENT INDICIA

Yoshio Hotta, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,866

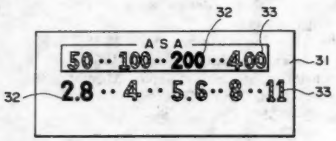
Claims priority, application Japan, Jun. 14, 1982, 57-102581; Aug. 19, 1982, 57-143842

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—339 R **14 Claims**

9. An electro-optical device having a liquid crystal and a pair of electrode plates one of which carries an electrode pattern, the electrode portions of the patterned plate being covered by translucent insulating film which is colored by dyeing, the non-electrode portions of the patterned plate being covered with undyed insulating film, and the other electrode plate being covered by insulating film.

14. A method for displaying information exhibiting a high contrast between an operational display and a half-display, said half-display being free of a parallax effect employing an electrooptical device (a) provided with at least one of a pair of electrode plates having a prescribed pattern of electrode in the



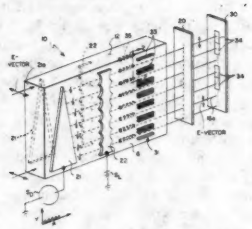
form of a character, numeral, or mark, and (b) said electrode being further provided with a translucent dyed pattern of an inulating film, and comprising applying a voltage between said electrode plates to generate said operational display of a desired pattern while simultaneously displaying the half display dyed pattern.

4,614,408

ELECTROOPTIC DEVICE FOR SCANNING AND INFORMATION MODULATING A PLURALITY OF LIGHT BEAMS

José M. Mir, and John A. Agostinelli, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1984, Ser. No. 644,301
Int. Cl.[4] G02F *1/03*
U.S. Cl. 350—388 **1 Claim**



1. A monolithic device for receiving a beam or plane polarized light, forming such received beam into a plurality of converging beams, focusing such beams at an image zone spaced from the device, information modulating such converging beams by changing the planes of polarization of selected ones of such plurality of converging beams, and scanning such plurality of converging light beams across the image zone, said device comprising:

(a) a substrate formed of electrooptic material which changes from one state to a birefringent state in response to an electric field established therein; and

(b) a plurality of electrodes on said substrate including

(i) at least one electrode responsive to a time-varying voltage signal for establishing through a first portion of said substrate a time-varying electric field which causes said first portion to vary its refractive index and deflect the received light beam without changing its polarization;

(ii) a lenticular-shaped electrode responsive to a received fixed voltage signal for establishing through a second portion of said substrate an electric field which causes said second portion to change its refractive index, such that said second portion is adapted to receive the deflected light beam, form a plurality of beams, and focus each of the beams at a particular region of an image zone; and

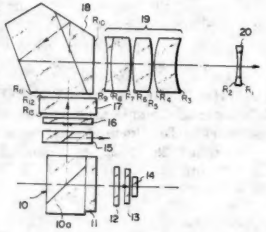
(iii) a light valve array having a plurality of modulating electrodes defining pixel portions, each said pixel portion being adapted to receive one of said plurality of beams, said modulating electrodes being responsive to voltage signals to establish through selected ones of said pixel portions electric fields which cause each of said selected pixel portions to change the plane of polarization of its light beam, whereby a beam of plane polarized light received by said device is formed into a plurality of beams which are focused at and scanned across respective regions of an image zone while their planes of polarization are selectively changed.

4,614,409

FINDER OPTICAL SYSTEM

Yutaka Sakai, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,595
Claims priority, application Japan, Jul. 23, 1984, 59-15238
Int. Cl.[4] G02B *17/00, 25/00*
U.S. Cl. 350—410 **6 Claims**



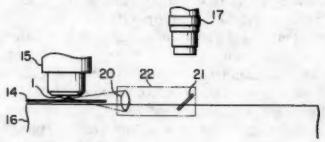
1. In a finder optical system for a single-lens reflex camera of the type wherein an image produced by an image pickup lens is viewed through an erect prism and an eyepiece, the improved finder optical system comprising, from the viewing end of the eyepiece, a negative lens, and a positive lens group consisting of at least two lens subgroups one of which constitutes a composite lens formed of a positive lens and a negative lens, wherein the overall length L and the focal length f of the eyepiece satisfy the relationship $0.65 < f/L < 0.9$.

4,614,410

ULTRASONIC MICROSCOPE WITH OPTICAL MICROSCOPE INCORPORATED THEREIN

Katsuzi Ikenaga; Masao Takai; Nobuyuki Nakashima, and Koji Umemoto, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 27, 1984, Ser. No. 654,899
Claims priority, application Japan, Sep. 28, 1983, 58-177927
Int. Cl.[4] G02B *21/00, 15/02*
U.S. Cl. 350—507 **6 Claims**



1. An ultrasonic microscope comprising:

ultrasonic wave transmitting and receiving means for transmitting and receiving an ultrasonic wave;

an acoustic lens for propagating the ultrasonic wave therethrough;

a display unit for forming and displaying an image based on

an ultrasonic wave reflected from a specimen and propagated through said acoustic lens;

an optical microscope disposed adjacent to said acoustic lens for observing said specimen;

a specimen table for supporting said specimen thereon and for moving said specimen to a position facing said acoustic lens and a position facing said optical microscope; and

means for changing the direction of an optical axis of said optical microscope so as to enable said optical microscope to monitor a gap between said acoustic lens and said specimen in a vertical direction in a region where said acoustic lens and said specimen face each other.

4,614,411

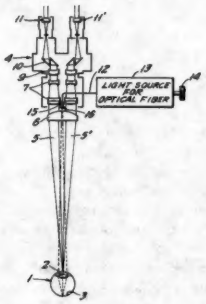
MICROSCOPE WITH CORRELATABLE FIXATION TARGET

Peter G. Hörenz, Hartsdale, N.Y., assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed May 16, 1985, Ser. No. 734,616

Int. Cl.[4] A61B *3/10*; G02B *21/06, 21/22*

U.S. Cl. 350—516 **6 Claims**



1. In a binocular operation microscope wherein a single main objectiveserves each of two spaced optical systems for an observing physician and has the capability of focusing said optical systems at the anterior surface of the eye of a patient under observation, and wherein a fixation-mark and light-projection system therefor also utilizes said main objective in its optical path of fixation-mark projection, the improvement wherein the fixation mark is the output end of an optical-fiber cable located behind and facing said objective lens and on the central axis of the microscope and between said optical systems, and wherein the light-projection system includes a light source with input to the other end of said optical-fiber cable and with means for selectively varying the intensity of light input to said optical-fiber cable, whereby an intensity level may be adjusted at which the physician can see a cornea-reflected image of the fixation mark in the context of the pupil of the observed eye and can be certain when the patient has aligned the observed eye upon the fixation mark, thus allowing manipulations on the eye which manipulations are directly correlated both to the viewing axis of the patient and the virtual image of the fixation target.

4,614,412

MOUNTING ARRANGEMENT FOR A VEHICLE REAR VIEW MIRROR HAVING UNIVERSALLY MANIPULABLE JOINTS

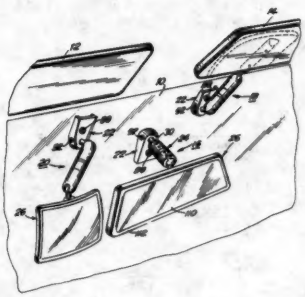
Stephen R. Cohen, 1127 Bay Park Pl., Far Rockaway, N.Y. 11691

Continuation-in-part of Ser. No. 424,575, Sep. 27, 1982, Pat. No. 4,486,075. This application Nov. 26, 1984, Ser. No. 675,074

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—632 **20 Claims**

1. A mirror assembly for a vehicle, comprising: a mirror unit, support means for securely mounting the mirror unit to the vehicle, and connecting means for coupling said mirror unit in a universally manipulatable relationship with said support means, said connecting means comprising first and second colinear elongated coupling members, each coupling member comprising means for selectively swiveling to a desired posi-



tion within a desired one of a first set of planes which are perpendicular to the longitudinal axis of the coupling members, and means for selectively swiveling to a desired position within a desired one of a second set of planes which intersect each other at the longitudinal axis of the coupling member, and pivot means for rotatingly connecting said first and second coupling means along their colinear longitudinal axes.

4,614,413

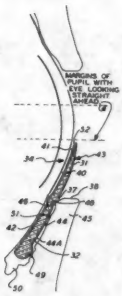
CONTACT LENS

George A. Obssuth, 2430 Cleveland Ave., Washington Township, Warren County, N.J. 07675

Filed Feb. 5, 1985, Ser. No. 697,923

Int. Cl.[4] G02C *7/04*

U.S. Cl. 351—161 **21 Claims**



1. A contact lens comprising a substantially concavo-convex lenticular carrier having

a palpebral anchor portion shaped for seating between the conjunctiva of the lower eyelid and the inferior sclera of the eyeball, and

an optical portion projecting upwardly from said anchor portion, said optical portion and said anchor portion being so proportioned that the junction between said portions extends substantially along the margin of the lower eyelid and the lens is held in place with respect to the lower eyelid by the muscles of the lower eyelid,

said anchor portion of said lens has a laterally-extending depression formed therein on the convex side thereof, said

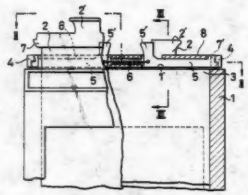
depression being proportional to receive the muscle of Riolan of the lower eyelid therein.

4,614,414

DARK SLIDE LOCKING SYSTEM FOR FILM HOLDER

Kanji Tomidokoro, Tokyo, Japan, assignor to Komamura Photographic Co., Ltd., Osaka, Japan

Filed Apr. 9, 1985, Ser. No. 721,446
Int. Cl.[4] G03B *17/26*
U.S. Cl. 354—284 **1 Claim**



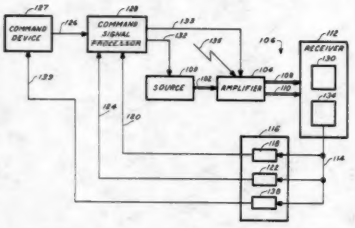
1. A dark slide locking system for film holder which comprises: a film holder, at least one dark slide insertable in the film holder, each dark slide having engaging portions formed at opposite ends of the upper edge of the dark slide, at least one sliding member provided for sliding movement along the upper edge of the dark slide, each sliding member having a locking portion at one end, and means for biasing the sliding member to cause the sliding member to resiliently lock the dark slide.

4,614,415

ILLUMINATION SIGNAL PROCESSING SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation of Ser. No. 727,330, Sep. 27, 1976, abandoned, which is a continuation of Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022. This application Feb. 2, 1978, Ser. No. 874,445
Int. Cl.[4] G03B *19/00*; G02F *1/13*; G09G *1/28*
U.S. Cl. 354—354 **16 Claims**



1. A colored display system comprising:

a coherent illumination source for generating coherent illumination;

electrical control means for generating an electrical control signal;

an illumination amplifier for generating controlled colored illumination in response to the coherent illumination from said coherent illumination source under control of the electrical control signal from said electrical control means;

projection means for generating projection colored illumination in response to the controlled colored illumination from said illumination amplifier;

a screen for generating a projected colored display in response to the projected colored illumination from said projection means; and

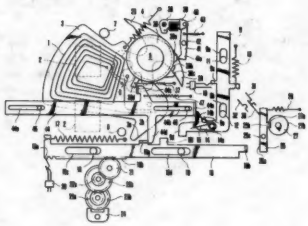
heat transfer means for cooling said illumination amplifier.

4,614,416

OPERATION CONTROL DEVICE FOR CAMERA

Toyotosi Suzuki, Tokyo, and Toru Nagata, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 546,053, Oct. 27, 1983, abandoned. This application Jun. 27, 1985, Ser. No. 750,643
Claims priority, application Japan, Oct. 29, 1982, 57-191071
Int. Cl.[4] G03B *1/18, 3/10, 9/64*
U.S. Cl. 354—400 **18 Claims**



1. An operation control device for a camera having a photographic aperture, comprising:

(a) shutter means for opening and closing said photographic aperture of said camera;

(b) electromagnetic driving means for driving said shutter means to a released position by an electromagnetic force; and

(c) speed governing means for controlling a release action of said shutter means, said speed governing means being shifted by a driving force different from the electromagnetic force of said electromagnetic driving means in a direction in which said electromagnetic force operates, wherein the release action of said shutter means follows the shifting movement of said speed governing means.

4,614,417

CAMERA

Yoshiaki Hata, Nishinomiya; Toshiaki Matsumoto; Shinji Tominaga, both of Osaka; Koji Yamamoto, Sakai; Maki Yamashita, and Yoshihiro Tanaka, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1984, Ser. No. 686,668
Claims priority, application Japan, Dec. 29, 1983, 58-246467; Feb. 15, 1984, 59-27831; Feb. 15, 1984, 59-27832; Mar. 5, 1984, 59-42788; Mar. 5, 1984, 59-42789; Jul. 14, 1984, 59-146200
Int. Cl.[4] G03B *3/00, 7/097, 7/08*
U.S. Cl. 354—403 **18 Claims**

1. A camera capable of performing automatic focus adjustment and automatic exposure control, which comprises:

focusing means for effecting a focus adjustment of a photo-taking lens, said focusing means having a focusing member movable for the focus adjustment of the photo-taking lens;

means for controlling the exposure amount, said controlling means having an exposure control member movable for varying the exposure amount;

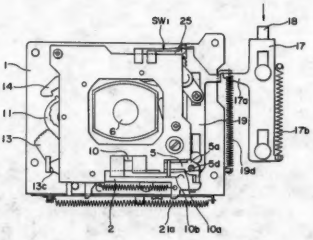
position detecting means for detecting the respective positions of the focusing member and the exposure control member and for generating a position signal indicative of the position of the focusing member and that of the exposure control member;

distance measuring means capable of performing a distance detecting operation to detect the distance to an object to

be photographed an generating a first distance measurement signal indicative thereof;

signal producing means for generating a second distance measurement signal indicative of a predetermined intermediate distance;

output selecting means for outputting the second distance measurement signal as a distance signal before the completion of the distance detecting operation of the distance measuring means, but outputting the first distance measurement signal as the distance signal after the completion of said distance detecting operation;



brightness detecting means for detecting the brightness of the object and for generating a brightness signal indicative of said brightness;

first means for stopping the focusing member in accordance with said position signal and said distance signal; and

second means for stopping the exposure control member in accordance with said position signal and said brightness signal.

4,614,418

DISTANCE DETECTION APPARATUS

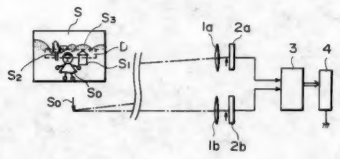
Akira Ishizaki, Yokohama; Takashi Kawabata, Kamakura, and Susumu Matsumura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1984, Ser. No. 635,743

Claims priority, application Japan, Aug. 10, 1983, 58-145065

Int. Cl.[4] G03B *3/10*

U.S. Cl. 354—407 **13 Claims**



1. A distance detection apparatus for measuring the distance to an object, comprising:

sensor means including a plurality of light sensitive elements for receiving radiation from the object and for outputting electrical signals;

a correlation detection circuit for detecting the correlation of the electric signals from predetermined groups of said light senitive elements and for forming signals respectively corresponding to information representing at least three different distances in a view field containing said object;

means for weighting said signals formed by said correlation detection circuit with different weight factors respectively corresponding to the distance information to which the signals correspond, and putting out weighted signals representing said weighting; and

detection means for detecting the signal among the weighted signals output by said weighting means and having a peak value.

4,614,419

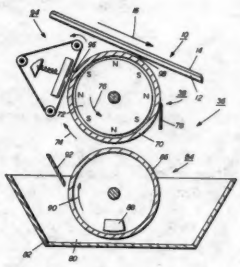
PRE-DEVELOPMENT INDUCTIVE CHARGING OF DEVELOPER MATERIAL

Herbert S. Patz, Wayland, Mass., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1984, Ser. No. 652,251

Int. Cl.[4] G03G *15/08, 15/09*

U.S. Cl. 355—3 DD **22 Claims**



12. An electrophotographic printing machine of the type having a photoconductive member arranged to have a latent image recorded thereon developed with a developer material, wherein the improvement includes:

conductive means for transporting the developer material into a development zone for depositing developer material onto the latent image recorded on the photoconductive member; and

insulative means, positioned closely adjacent said conductive means defining a pre-development zone through which the developer material passes before entering the development zone, for charging the developer material being advanced by said conductive means into the development zone.

4,614,420

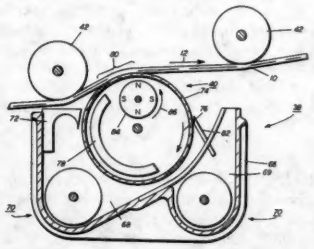
MAGNETICALLY AGITATED DEVELOPMENT SYSTEM

Anthony R. Lubinsky, Webster, and James E. Williams, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 31, 1983, Ser. No. 499,578

Int. Cl.[4] G03G *15/09*

U.S. Cl. 355—3 DD **13 Claims**



1. An apparatus for developing a latent image recorded on a member, including:

a tubular member journaled for rotary movement, positioned closely adjacent to the member defining a develop-

ment zone therebetween, for transporting developer material into contact with the member in the development zone so as to develop the latent image record thereon;

a stationarily mounted magnetic member disposed interiorly of and spaced from said tubular member to attract the developer material to at least the portion of the circumferential surface of said tubular member located before the development zone; and

a rotatably mounted magnetic member disposed interiorly of and spaced from said tubular member, said rotatably mounted magnetic member being positioned opposed from the development zone to agitate the developer material passing therethrough during the rotation thereof.

4,614,421

DUPLICATING-SHEET-NUMBER SETTING DEVICE

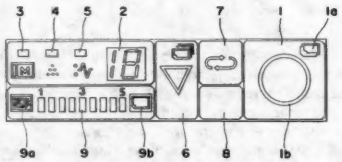
Haruo Nishiyama, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 12, 1985, Ser. No. 743,745

Claims priority, application Japan, Jun. 13, 1984, 59-122780; Jul. 23, 1984, 59-153579

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 CU **2 Claims**



1. A duplicating-sheet-number setting device for an operating unit of a duplicating apparatus, which is provided with a display for displaying the set number of the duplicating sheets, a copy button which causes the duplicating operation to be started, and is capable of continously duplicating the set number of duplicating sheets from one sheet of document, characterized in that a counter is provided which is counted up when said copy button has been operated and counts up the number of operations when the copy button has been operated during the duplicating operation, the digital value of the counter is displayed, on said display, as the set number of the duplicating sheets.

4,614,422

CONTROLLER FOR TRIMMING COPY SHEETS FROM A MATERIAL WEB IN A COPYING MACHINE

Reinhard Sobotta, Siegen-Eisern, and Heinrich Isermann, Siegen, both of Fed. Rep. of Germany, assignors to Meteor-Siegen Apparatebau Paul Schmeck GmbH, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,722

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412413

Int. Cl.[4] G03B *29/00*

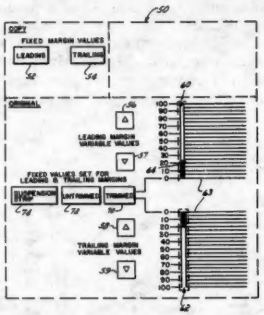
U.S. Cl. 355—29 **10 Claims**

1. A controller for trimming copy sheets from a material web in a copying machine responsive to keypad settings entered into said keypad, the keypad comprising:

illuminated bar display means for graphically displaying an optical display value corresponding in length to at least one margin width of an original document;

document margin key means for altering said length of said optical display value to visually correspond to said margin width of said originally document;

digital value generating means responsive to at least one of said document margin key means and said illuminated bar display means for generating a digital value corresponding



to said optical display value for controlling operation of a copying machine trimming device.

4,614,423

VARIABLE MAGNIFICATION COPYING APPARATUS

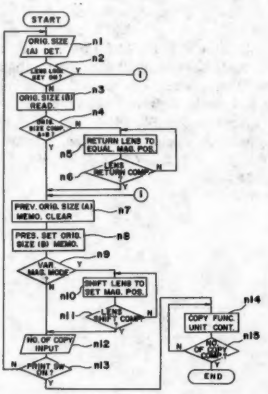
Shoichiro Yoshiura, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1985, Ser. No. 741,852

Claims priority, application Japan, Jun. 11, 1984, 59-121001

Int. Cl.[4] G03B *27/52*

U.S. Cl. 355—55 **2 Claims**

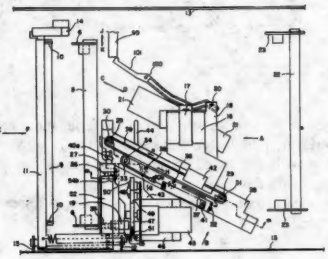


1. A variable magnification copying apparatus having a function for detecting or inputting original document sizes so as to effect copying at converted magnifications by shifting lens positions according to the set copying magnifications, the improvement comprising a memory means for storing the detected or inputted original document size, an original document size comparing means for comparing the original document size previously stored with the original document size to be copied at present, a lens position returning means for returning the lens to a position corresponding to an equal size magnification copying in the case where there is a difference between the original document size previously stored and the original document size to be copied at present upon the comparison, and means for maintaining the previous copying magnification by releasing functions of said original document size comparing means and said lens position returning means.

4,614,424
COPYING APPARATUS

Akinori Endo; Tatsumi Shimanari, and Shunji Watanabe, all of Tokyo, Japan, assignors to Casio Electronic, Mfg. Co. Ltd. and Casio Computer Co., Ltd., both of Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 649,708
Claims priority, application Japan, Jan. 20, 1984, 59-7028
Int. Cl.[4] G03B *27/34, 27/40*
U.S. Cl. 355—56 **23 Claims**



1. A copying apparatus capable of copying an original at a plurality of different magnifications, said apparatus comprising:

(a) means for scanning said original, said scanning means comprising an exposure lamp for exposing said original as it is scanned and means for scanning said original at a plurality of different speeds, each of said speeds corresponding to one of said magnifications;

(b) a lens and a plurality of mirrors for conducting an image of said original to a photosensitive body;

(c) means for selecting one of said different copying magnifications prior to exposure of said original; and

(d) central means for moving said lens and said plurality of mirrors into a position which corresponds to a selected copying magnification and for changing the scanning speed of said scanning means to correspond to said selected magnification, prior to a copying cycle, said control means comprising a linear cam having two camming surfaces located along opposed sides of said cam and first and second rollers which abut said camming surfaces, wherein said first roller is indirectly attached to a lens table holding said lens, and wherein said second roller is indirectly attached to a table for holding one of said mirrors, wherein reciprocation of said cam moves said lens table in a linear fashion at an angle with respect to said cam and said mirror table in a substantially perpendicular fashion with respect to movement of said cam.

4,614,425
PHOTOGRAPHIC PRINTING METHOD AND APPARATUS

Harry J. Copeland, Springfield, and John W. Powers, Battlefield, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Filed Apr. 20, 1984, Ser. No. 602,337
Int. Cl.[4] G03B *27/04*
U.S. Cl. 355—99 **16 Claims**

1. The method of exposing boards which are photosensitive on both sides, for production of printed circuits on both sides, to light through films on both sides, each film being imaged in a circuit pattern, said method comprising the steps of:

A. placing a first film through which one side of each of a plurality of boards are to be exposed in registered position on a light-transmitting support,

B. placing a first board in registered position on the first film,

C. placing a second film through which the other side of each board is to be exposed in registered position on said first board,

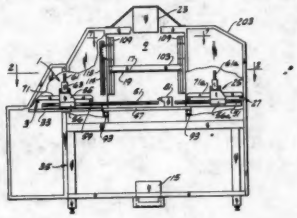
D. bringing a window into engagement with the second film and pressing the second film, said first board and the first film together against the support,

E. exposing one side of said first board to light through the support and the other side of said first board to light through the window,

F. gripping the first film to the support and the second film to the window, then retracting the window,

G. removing the exposed board,

H. picking up the next board to be exposed from a stack of



boards and bringing it into registered position on the lower film,

I. moving the window with the second film gripped thereto to place the second film in registered position on said next board and to press the second film, said next board and the first film together against the support,

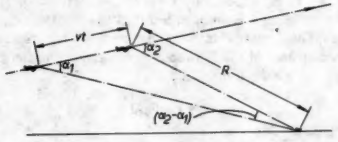
J. exposing one side of said next board to light through the support and the other side of said next board to light through the window, and

K. repeating steps F–J.

4,614,426
PASSIVE TARGET DETECTOR

Ivor R. Baxter, Brentwood, and Thomas Hair, Chelmsford, both of England, assignors to The Marconi Company Limited, Stanmore, England

Filed Nov. 7, 1983, Ser. No. 549,554
Claims priority, application United Kingdom, Nov. 9, 1982, 8231533
Int. Cl.[4] G01C *3/00, 3/08*
U.S. Cl. 356—1 **8 Claims**

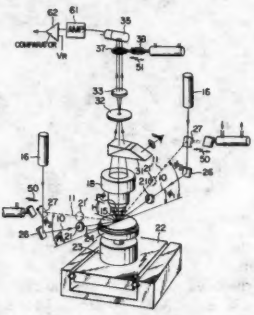


1. A passive target detector adapted to be carried on a vehicle comprising: means for inspecting a field of view when the vehicle is at different positions and for establishing, for each inspection, the direction, relative to the vehicle, of a target having an apparent dimension and/or intensity indicating that it is of potential interest; and means for comparing the direction established during two inspections to give an indication of the range of the target and for using the said indication of range to establish whether the real dimension and/or intensity is indicative of a target of interest.

4,614,427
AUTOMATIC CONTAMINANTS DETECTION APPARATUS

Mitsuyoshi Koizumi; Yoshimasa Oshima; Nobuyuki Akiyama, all of Yokohama, and Toshiaki Yachi, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Electronics Engineering Co., Ltd., Kanagawa, both of, Japan

Filed May 18, 1984, Ser. No. 611,947
Claims priority, application Japan, May 20, 1983, 58-87686
Int. Cl.[4] G01N *21/88, 21/21*
U.S. Cl. 356—237 **11 Claims**



1. An automatic contaminants detection apparatus comprising:

a polarized laser beam source;

a polarized laser beam irradiation optical system for irradiating the polarized laser beam emitted from said polarized laser beam source to a sample surface with one of first and second angles of grazing, said polarized laser beam irradiation optical system including a grazing angle switching means for switching between the first and second angles of grazing depending on the presence or absence of a pattern on the sample surface, the second angle of grazing being larger than the first angle of grazing;

a detector for condensing scattered or reflected lights of the laser beam from the sample surface and detecting the condensed light with or without interleave of an analyzer; and

analyzer switching means for inserting or removing said analyzer into or from a detection light path of said detector depending on the presence or absence of a pattern on the sample surface.

4,614,428
HIGH-TEMPERATURE, HIGH-PRESSURE OPTICAL CELL

Ronald P. Harris, Decatur; Lawrence R. Holland, Huntsville, both of Ala., and Robbie E. Smith, Fayetteville, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 17, 1984, Ser. No. 571,615
Int. Cl.[4] G01N *21/03*
U.S. Cl. 356—246 **8 Claims**

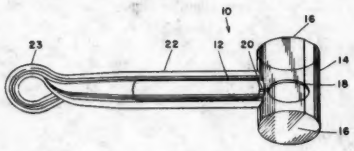
1. An optical cell for containment of chemicals under conditions of high temperature and high internal pressure comprising:

a cell body comprising a tube;

two optically-polished windows made of material identical to the material of which said tube is made, said windows being inserted into and fused into opposite ends of said tube, said optical windows being precisely spaced apart to form a cavity of arbitrary convenient length, thereby determining a desired precise cavity volume inside the center portion of said tube;

said windows each being thicker than the thickness of said cavity, for providing a cell capable of containing high internal pressure without outside support;

at least one hole extending radially through said tube into said cavity;



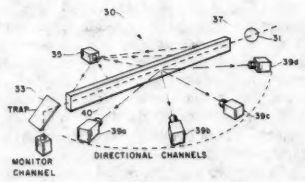
at least one hollow stem made of material identical to said material of which said tube and said windows are made, said stem being fused to said tube around said hole for loading said cavity;

whereby said stem may be sealed by fusing after said cavity is loaded.

4,614,429
ATMOSPHERIC CONTRAST TRANSMITTANCE MONITOR

Richard W. Johnson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 14, 1984, Ser. No. 610,142
Int. Cl.[4] G01N *21/47*
U.S. Cl. 356—343 **6 Claims**



1. An electro-optical system for monitoring the optical state of the atmosphere, comprising:

a. a nephelometer system for measuring directional volume scattering functions on atmospheric samples, said nephelometer system including means for controllably illuminating a predetermined atmospheric sample volume, and a plurality of radiation detectors for measuring the illumination scattered by said sample volume at a preselected plurality of scattering angles and yielding a corresponding preselected plurality of specifications of aerosol characteristics of said atmospheric sample volume, and for providing output signals corresponding to said plurality of specifications;

b. first and second scanning lenses for scanning, respectively, upper and lower radiance distributions of the atmosphere from respective upper and lower hemispheres of observation;

c. first and second detector means, operatively connected to respective said first and second scanning lenses for detecting the radiance observed by the scanning lenses and for providing output signals corresponding to the intensities of the observed said radiance distributions; and

d. electronic means, operatively connected to said plurality of radiation detectors and to said first and second detector means and responsive to the output signals from said radiation detectors and said first and second detector means, for calculating atmospheric contrast transmittance according to a preprogrammed computational procedure.

4,614,430

METHOD OF DETECTING PATTERN DEFECT AND ITS APPARATAUS

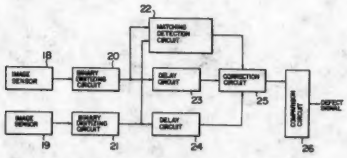
Yasuhiko Hara; Yoshimasa Ohshima; Satoru Fushimi, and Hiroshi Makihira, all of Yokohama, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Apr. 27, 1984, Ser. No. 604,998

Claims priority, application Japan, Apr. 28, 1983, 58-73727; Sep. 9, 1983, 58-165075

Int. Cl.[4] H06N 7/18

U.S. Cl. 356—394 7 Claims



1. A method of detecting a pattern defect in accordance with the difference between a pair of patterns comprising the steps of:

(a) obtaining a first binary signal by scanning and imaging one of said patterns;

(b) obtaining a second binary signal corresponding to the other pattern by scanning and imaging the other of said patterns or from information previously stored in storage means;

(c) detecting, two-dimensionally, a positioning error between said patterns, during a period when said first and second binary signals are delayed by a predetermined amount, in such a manner that each of the picture elements included in a predetermined area of a two-dimensional image, which is delayed and cut out two-dimensionally corresponding to said one pattern, is compared with a specified picture element included in a predetermined area of an image which is delayed and cut out two-dimensionally corresponding to said other pattern, such that the result of said comparison is summed statistically and each of said picture elements in accordance with said scanning, and such that said positioning error is detected by detecting a position shown as an extreme value two-dimensionally from said summed values;

(d) correcting said positioning error by two-dimensionally shifting at least one of said first and second binary signals which have been delayed by said predetermined amount according to said detected positioning error; and

(e) two-dimensionally comparing the first and second binary signals which have been corrected and extracted with each other.

4,614,431

ALIGNMENT APPARATUS WITH OPTICAL LENGTH-VARYING OPTICAL SYSTEM

Yoshihiro Komeyama, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1984, Ser. No. 580,709

Claims priority, application Japan, Feb. 18, 1983, 58-24552; Feb. 21, 1983, 58-26154; May 30, 1983, 58-94017

Int. Cl.[4] G01B 11/00

U.S. Cl. 356—401 8 Claims

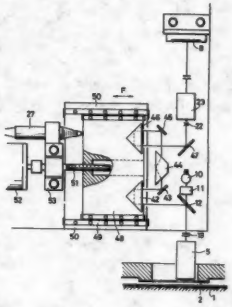
1. In an aligner system wherein a mask and a wafer are arranged so as to oppose each other with a predetermined gap therebetween, an alignment apparatus comprising:

an objective for focusing an alignment mark formed on the mask and an alignment mark formed on the wafer;

a photodetector for imaging both of the alignment marks;

an optical length-varying optical system including at least one prism means disposed for rectilinear movement along a guide between the objective and a focusing position so as to change an optical length of the optical system and to bring each of the alignment marks into focus, the optical system enabling light rays from the alignment marks to enter the at least one prism means an even number of times and to exit from the at least one prism means an even number of times so that the first entrance of the light rays to the at least one prism means and the last exit of the light rays from the at least one prism means may be shifted, the first entrance of the light rays including optical images from the objective and the last exit of the light rays being directed toward the photodetector;

a displacement detecting sensor for detecting a magnitude of the movement of the at least one prism means of the optical length-varying optical system;



magnification compensation means for compensating magnitudes of displacements of the respective alignment marks detected by the photodetector, from an optic axis by calculation based on the movement magnitude of the at least one prism means detected by the displacement detecting sensor, the optical length and a focal distance of the objective, so as to equalize magnifications of the images; and

means to detect a relative displacement magnitude between the mask and the wafer by the use of the images of the equal magnifications compensated by the magnification compensation means;

whereby the mask and the wafer are aligned by movement thereof.

4,614,432

PATTERN DETECTOR

Shinji Kuniyoshi, Tokyo; Tsuneo Terasawa, Hachioji; Toshiei Kurosaki, Tokyo; Yoshio Kawamura, Tokyo; Sumio Hosaka, Tokyo, and Akihiro Takanashi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,642

Claims priority, application Japan, Oct. 29, 1982, 57-189047

Int. Cl.[4] G01B 11/00

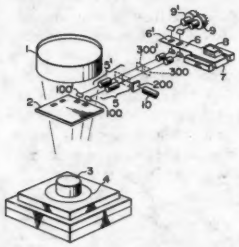
U.S. Cl. 356—401 16 Claims

1. A pattern position detector for detecting a postion of a positioning pattern on a wafer on the basis of a magnified projected image of said positioning pattern formed by a reflected light from said positioning pattern illuminated by a light, comprising:

(a) magnifying optical system means for magnifying and projecting said reflected light from said pattern to form said magnified projected image; and

(b) monochromatic light selection means for selecting a monochromatic light of a desired wavelength out of a plurality of monochromatic lights contained in said light

as the light for forming said magnified projected image of said pattern, whereby a magnified projected image having



a highest contrast is obtained by selecting the monochromatic light of the desired wavelength which is suitable.

4,614,433

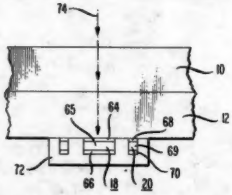
MASK-TO-WAFER ALIGNMENT UTILIZING ZONE PLATES

Martin Feldman, Berkeley Heights; Peter A. Heimann, Clifton; William A. Johnson, Fanwood; Theodore F. Retajczyk, Jr., Clinton, and Donald L. White, Bernardsville, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 9, 1984, Ser. No. 629,056

Int. Cl.[4] G01B *11/27*

U.S. Cl. 356—401 **14 Claims**



1. A process for aligning a mask element with respect to a wafer element during manufacture of integrated-circuit devices on the wafer, wherein each of said mask and wafer elements includes at least one alignment mark, said mask element comprising an antireflection coating on the side thereof opposite to the side that includes said at least one mark and comprising a localized blocking layer encompassing each such mark, said process comprising the step of directing incident coherent radiation at said marks off-normal with respect to the surface of said coating such that reflections from said mask are minimized, and reducing by means of the localized blocking layer that encompasses each such mark the amount of said incident radiation that propagates into the mask-to-wafer space to be reflected from the surface of the wafer element towards said at least one mark on said mask element.

4,614,434

DOUBLE MULTICHROMATIC PHOTOMETER WITH A SINGLE LIGHT-SOURCE AND A SINGLE DETECTOR, PARTICULARLY FOR PERFORMING CHEMICAL AND CLINICAL ANALYSES

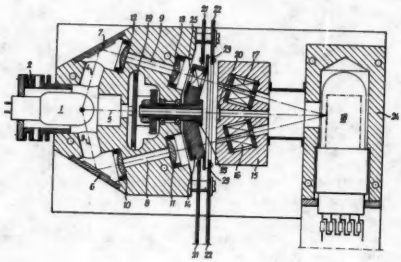
Henry H. Welch, and Corindo Felici, both of Rome, Italy, assignors to POLI-MAK S.p.A., Rome, Italy

Filed May 31, 1984, Ser. No. 615,863

Claims priority, application Italy, Feb. 21, 1984, 47723 A/84

Int. Cl.[4] G01J *3/51*; G01N *21/31*

U.S. Cl. 356—418 **7 Claims**



1. A multichromatic double photometer particularly suitable for chemical and clinical analyses, wherein the photometer comprises

a single light-source;

a single detector;

a first measuring optical path and a second measuring optical path from the light source to the detector for carrying out measurements, each optical path comprising a reflection mirror and a collimating optical assembly;

a reference optical path from the light source which reaches directly the detector after passing through a neutral density filter;

a rotary drum inserted in the first and second measuring optical paths, and bearing a plurality of interference filters arranged in a circular arc so that when one of such filters is inserted into one of the two measuring optical paths, the other measuring optical path is blocked;

a first measurement cuvette in the first measuring optical path between the drum and the detector;

a second measurement cuvette in the second measuring optical path between the drum and the detector;

a rotating shutter disk inserted in the reference optical path and having a hole for passage of a reference beam;

two electronic printed circuit boards having light-emitter receiver optical paths;

a tab integral with the drum and bearing a hole interposed between the two electronic printed circuit boards and cooperating with the boards so as to selectively admit light emitter-receiver optical paths borne by said boards; and

motor means for causing said shutter disk, said interference filter-bearing drum and said tab to rotate in a coordinate manner so as to individually select any one of the interference filters.

4,614,435

MACHINE FOR MIXING SOLID PARTICLES WITH A FLUID COMPOSITION

William R. McIntire, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Mar. 21, 1985, Ser. No. 714,586

Int. Cl.[4] B01F *7/16*; B28C *5/00*

U.S. Cl. 366—40 **4 Claims**

1. A machine for mixing solid particles with a fluid composi-

tion, which includes means for exhausting entrained air from the mixture of solid particles and fluid, the machine comprises:

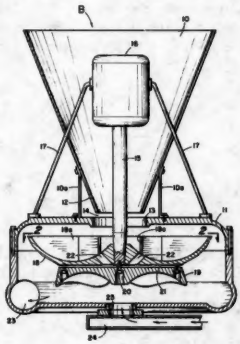
a hopper for containing the solid particles, the hopper has an outlet end that terminates above the inlet eye of a housing member, so that an exterior air exhaust space is defined between the hopper outlet end and the housing inlet eye;

a drive shaft that extends into the housing through the inlet eye;

a slinger member that is fastened to the drive shaft, the slinger member has a toroidal configuration, the slinger member has a topside concave surface that faces toward the top of the housing and an underside surface with a recess therein;

the topside surface of the slinger member is interrupted by several blade members, the depth of each blade is the linear distance from the upper edge to the lowest point of each blade, the linear distance between the said upper edge of each blade member and the nearest opposite point on the flat surface of the housing defines a positive gap between the slinger member and the housing, and the linear distance of said positive gap is in the range of from about one-half the depth of each blade to about twice the depth of each blade;

an impeller member that is fastened to the underside surface of the slinger member and to the drive shaft, so that the



recess in the slinger member defines an interior air exhaust space between the underside surface of the slinger member and the topside surface of the impeller member;

the slinger member includes at least one interior air exhaust channel that extends from the interior air exhaust space to the topside surface of the slinger member;

the impeller member has a vortex configuration, including an underside concave surface that faces toward the bottom of the casing;

the slinger member has a larger surface area than the impeller member;

the slinger and impeller members are enclosed by the housing and these members are rotatable inside the housing;

a drive means for rotating the drive shaft, the slinger member, and the impeller member;

an inlet conduit having one end in communication with the housing, and the opposite end in communication with a source for the fluid composition;

an outlet port in the housing for discharging a mixture of the solid particles and fluid composition from the housing;

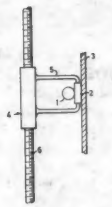
wherein, during mixing of the fluid composition and the solid particles inside the housing, air that is entrained in the mixture is carried out of the mixture through the interior air exhaust space, the interior air exhaust channel, and the exterior air exhaust space.

4,614,436

METHOD OF VIBRATING BULK MATERIAL IN MOULDS

Lars I. Setterberg, Mjölnartorpsvägen 11, S-182 63 Djursholm, Sweden

Filed Feb. 13, 1985, Ser. No. 701,174
Claims priority, application Sweden, Feb. 15, 1984, 8400816
Int. Cl.[4] B01F *11/00*
U.S. Cl. 366—114 **4 Claims**



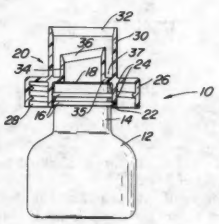
1. In a method of vibrating mass materials in moulds, forms or vessels including magnetically attractive walls with the aid of at least one vibrator mounted on a mould, form or vessel, said vibrator being fastened to a magnet with the aid of which said vibrator is attached to the walls for mounting on the mould, form or vessel; the improvement comprising carrying out vibration with said vibrator continuously while continuously moving the vibrator along the mould, form or vessel at the same time the mould, form or vessel is being filled with said material, and continuously maintaining magentic attraction between said magnet and said walls during said vibration and during movement of the vibrator along the mould.

4,614,437

MIXING CONTAINER AND ADAPTER

John D. Buehler, Bridgeton, N.J., assignor to Dougherty Brothers Company, Buena, N.J.

Filed Nov. 2, 1984, Ser. No. 667,656
Int. Cl.[4] B01F *5/06*
U.S. Cl. 366—130 **15 Claims**



1. Mixing apparatus comprising

a container for containing a first ingredient to be mixed and an adapter for the container,

the container having a neck terminating in an opening sealed by a frangible seal, the neck having means integral therewith and adjacent the opening for releasably securing the adapter to the container in a first position and a second position, the second position being discretely separate from the first position,

the adapter having cooperating first means integral therewith for releasably securing the adapter to the container in the first position and cooperating second means integral therewith for releasably securing the adapter to the container in the second positibn,

the adapter further having means integral therewith for break-

ing the frangible seal when the adapter is in the second position and means integral therewith for preventing breaking of the frangible seal when the adapter is in the first position,

the adapter also having means integral therewith for releasably securing the adapter to a second container for containing a second ingredient to be mixed when the adapter is in the second position, and

the adapter having a passage through which the first and second ingredients may flow for mixing when the adapter is in the second position.

4,614,438

METHOD OF MIXING FUEL OILS

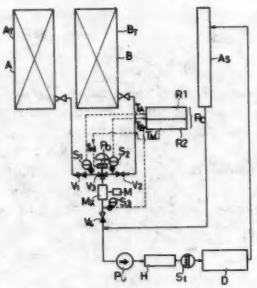
Shozaburo Kobayashi, Takarazuka, Japan, assignor to Kabushiki Kaisha Kokusai Technicals, Osaka, Japan

Filed Apr. 2, 1985, Ser. No. 718,865

Claims priority, application Japan, Apr. 24, 1984, 59-84886; Jun. 5, 1984, 59-115257

Int. Cl.⁴ B01F *15/02*

U.S. Cl. 366—132 **7 Claims**



1. A method of automatically mixing and controlling two fuel oils in a desired ratio, said oils being substantially different in oil temperature prior to mixing, said method comprising:

calculating T_M which satisfies the following equation (1)

$$\frac{M_A}{M_B} = \frac{T_B - T_M}{T_M - T_A} \quad (1)$$

wherein

T_A and T_B represent the measured temperatures of fuel oils A and B, respectively; M_A and M_B represent desired mixture ratios (percentage) between the two oils which are set points for control of the two oils A and B; and T_M represents a theoretical oil temperature of the mixed oil at a mixture ratio of M_A:M_B,

and adapting the result of the calculation for use as reference input to thereby achieve automatic mixing and control of the fuel oils A and B in the desired ratios of M_A and M_B which are set points for control of the oils under feeding back the measured temperature T_M' of the mixed oil as compensation input.

4,614,439

MIXER FOR MIXING FIBRES INTO A SLURRY

William H. Brunt, Tyldesley, and Christopher J. Wilson, Chorley, both of England, assignors to Pilkington Brothers P.L.C., St. Helens, England

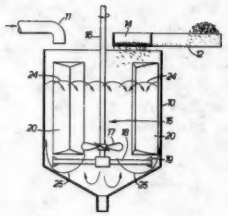
Filed Jul. 3, 1985, Ser. No. 751,398

Claims priority, application United Kingdom, Jul. 6, 1984, 8417352

Int. Cl.⁴ B01F *7/16*

U.S. Cl. 366—154 **6 Claims**

1. A mixer for mixing fibres into a slurry, comprising an upright cylindrical chamber, means for supplying a batch of slurry into the chamber and means for feeding glass fibres on to the surface of the batch of slurry in the chamber, wherein an agitator is provided in the chamber in the form of a rotatable vertical shaft coincident with the axis of the chamber and carrying adjacent the lower end of the chamber both a plurality of impeller blades whose radial extent is substantially less than the radius of the chamber and at least one horizontal member with tip blades adjacent the cylindrical wall of the



chamber, the impeller blades and the tip blades being angled in opposite senses to produce a vertical circulation as well as a rotational movement of the slurry in the chamber, and stationary baffles are secured to the wall of the chamber and angled so that, in conjunction with the vertical and rotational movements of the slurry, they cause the production of standing waves on the surface of the slurry to assist in folding into the slurry glass fibres falling on to its surface.

4,614,440

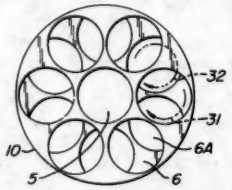
STACKED MOTIONLESS MIXER

L. Tony King, Long Beach, Calif., assignor to Komax Systems, Inc., Long Beach, Calif.

Filed Mar. 21, 1985, Ser. No. 715,153

Int. Cl.⁴ B01F *5/06*

U.S. Cl. 366—336 **13 Claims**



1. A stationary material mixing apparatus for mixing a fluid stream which is in the shape of a conduit compromising individual biscuit sections which are aligned along a longitudinal axis, said biscuit sections each possessing a plurality of openings where within said openings are located mixing elements which induce a rotational angular velocity to the fluid stream passing therethrough, said apparatus being further characterized such that substantially all of said mixing elements induce the same rotational sign to said fluid and wherein at least some of said openings in any one biscuit are misaligned with respect to openings in adjacent biscuit elements and at least one of said openings in one or more of said biscuits is blocked to the flow of said fluid stream.

4,614,441

APPARATUS FOR TEMPERATURE MEASUREMENT IN A SAUCEPAN HEATING SYSTEM

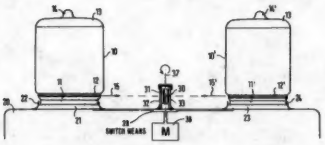
Kurt Wolf, Wildbad, Fed. Rep. of Germany, assignor to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Filed Nov. 15, 1984, Ser. No. 671,541

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341234

Int. Cl.[4] G01J *5/28;* G01K *13/00*

U.S. Cl. 374—130 17 Claims



1. Apparatus for measuring the temperature of the contents of a saucepan in a heating system comprising said saucepan (10, 10') with its said contents placed on and heated by a heating element (21, 23), wherein said saucepan has a radiating surface (12, 12') encircling said saucepan in a transition area between the bottom (11, 11') and the side wall of said saucepan, and said radiating surface radiates electromagnetic radiation related to the temperature of said radiating surface; and a radiation sensor (30) spaced within a measurement range from said radiating surface with an operating radiation range for sensing electromagnetic radiation having a wavelength of from about 8 μm to about 20 μm, a focusing means with a focal point spaced from said radiation sensor, said measurement range determined by said focal point, whereby electromagnetic radiation emitted by said radiating surface is sensed by said radiation sensor to determine said temperature at said radiating surface.

4,614,442

THERMOMETER SHEATH PACKAGE FOR ELECTRONIC THERMOMETERS

George W. Poncy, 9725 Investment La., Rivera Beach, Fla. 33404

Filed Jan. 18, 1985, Ser. No. 692,697

Int. Cl.[4] G01K *1/08*

U.S. Cl. 374—158 3 Claims

1. A thermometer sheath package comprising a pair of inner strips of flexible thermoplastic material, a pair of flexible cover strips sandwiching said inner strips, said strips being sealed together along a seal line to form a tear seal between said inner strips and a peelable seal between said cover strips and said inner strips, said seal line being shaped so that said tear seal in said inner strips defines a thermometer sheath from said inner strips adapted to fit over the probe of an electronic thermometer, said cover strips having weakened lines defined therein extending across said paper strips adjacent to the mouth of said sheath to define tabs in said cover strips adjacent said mouth, said cover strips being sealed to said inner strips in flat seals in areas extending across said paper strips adjacent to said weakened lines and on the opposite side of said weakened lines from the toe of said sheath, said seal line defining the mouth of said sheath extending across said weakened lines and into said flat seal areas whereby said tabs will be pressed against a handle of an inserted electronic thermometer to hold the sheath securely in position on a probe of the electronic thermometer for electronic thermometers with different girths at the mouth of said sheath.

4,614,443

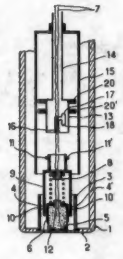
THERMAL SENSOR FOR CHEMICAL REACTOR

Jean-Marie Hamert, Hoenheim, France, assignor to Societe de Dietrich & Cie, Niederbronn les Bains, France

Filed Nov. 29, 1984, Ser. No. 675,985

Int. Cl.[4] G01K *1/14, 7/00*

U.S. Cl. 374—163 5 Claims



1. A thermal sensor, in particular for measuring temperature in a chemical reactor comprising;

a cylindrical shell of anti-corrosive material open at an outer end and closed by a thin base at an inner end,

a cylindrical inner sleeve of smaller diameter then said shell welded to said base,

a temperature measuring head removably received in said inner sleeve and positioned against said base of said shell and having lead wires, said temperature measuring head comprising at least one temperature sensing element in a compression resistant insulating mass of low thermal inertia in a casing,

a connector having quick-disconnect means for connecting it with said inner sleeve and a compression spring acting between said connector and said measuring head to press said measuring head against said base of said shell, and

a tubular stem extending from said connector out through said open outer end to the exterior of said shell, said stem receiving said lead wires of said measuring head.

4,614,444

BEARING SEAL ASSEMBLY

John R. Hines; Raymond J. Monroe, both of Cadillac, and Danny R. Ruppel, Lake City, all of Mich., assignors to Cadillac Rubber & Plastics, Inc., Cadillac, Mich.

Filed Jul. 5, 1985, Ser. No. 752,464

Int. Cl.[4] F16C *17/02, 33/74*

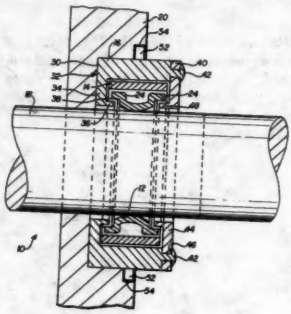
U.S. Cl. 384—138 10 Claims

1. A bearing seal assembly comprising an outer race adapted to mount within a housing, forming a bearing and having a relatively low coefficient of friction; and an inner race rotatably mounted within the outer race and adapted to circumscribe and seal against a shaft; wherein the improvement comprises:

an outer race made of a molded polymer having a durometer in the range of R64 (Rockwell) to R21 (Rockwell);

an inner race comprising an inner annular member of a relatively flexible nature to seal against the shaft, yet slidable longitudinally on the shaft, and made of a molded polymer having a durometer in the range of 44 (Shore D) to 63 (Shore D); and an outer annular member of a relatively low coefficient of friction with respect to the inner annular member so as to enable the outer annular member to rotate relatively friction free within the outer race and

made of a molder polymer having a durometer in the range of R115 (Rockwell) to R121 (Rockwell); and



a securing means for nonrotably securing the inner annular member to the outer annular member.

4,614,445
METAL-LUBRICATED HELICAL-GROOVE BEARING COMPRISING AN ANTI-WETTING LAYER

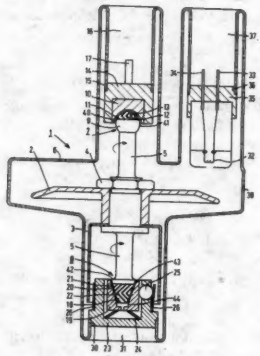
Jan Gerkema, and Jozef B. Pelzer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,944

Claims priority, application Netherlands, Nov. 8, 1983, 8303833

Int. Cl.[4] F16C *33/10, 33/72, 33/12*

U.S. Cl. 384—368 **15 Claims**



1. In a device comprising a helical-groove bearing having bearing surfaces and a liquid metal lubricant, and surface areas adjoining said bearing surfaces, the improvement wherein said surface areas of the bearing, which could form a part of a creepage path for the lubricant, are locally provided with an anti-wetting layer consisting mainly of titanium oxide for repelling the metal lubricant.

4,614,446
FASTENING DEVICE FOR THE ROLLERS OF A ROLLER BUSHING

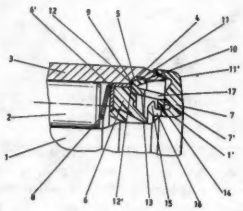
Peter Dreschmann, Dittelbrunn; Wilhelm Walter, Reith; Günter Scharting, Gochsheim, and Steffen Neugebauer, Hesselbach, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed May 2, 1985, Ser. No. 729,674

Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419111

Int. Cl.[4] F16C *33/78*

U.S. Cl. 384—484 **6 Claims**



1. An axial fastening device for the rollers of a roller bushing, wherein the roller bushing comprises an inner pin, an outer bushing around and spaced from the pin defining an annular space between them and rolling elements disposed between the pin and the outer bushing in the annular space, the pin having a free, axially outward end; the outer bushing having its outward end, the rollers having respective outward ends; the pin and outer bushing outward ends extending axially outward beyond the roller outward ends;

the fastening device comprising:

the outer bushing having a radially inwardly facing groove formed in it toward the outward end of the outer bushing and beyond the outward ends of the rollers inside the outer bushing; the groove having an axially inward side that is axially closer to the ends of the rollers and having an axially outward side that is axially outward of the inward side of the groove;

the axially inward side of the groove comprises a radially directed surface; the axially outward side of the groove comprises an obliquely inclined surface which is inclined axially outwardly radially inwardly of the outer bushing;

a holding ring, generally of U shape in longitudinal cross-section; the ring including a radially more outward leg which is directed substantially axially and which is inclined slightly obliquely radially outwardly in the axially outward direction from the roller; the ring including a radially more inward leg also extending axially outwardly in the direction away from the roller; the ring further including a transition leg for joining its radially inward and radially outward legs, giving the holding ring a generally U shape;

the transition leg having a radially-directed side which faces axially inwardly toward the end of the rollers; the radially inwardly-directed side of the transition leg resting against the axially inward side of the groove in the outer bushing; the radially outward leg of the holding ring terminating in an axially outward end side which is disposed in the groove and rests against the obliquely inclined outward side of the groove, and the outward leg of the holding ring being of such a length that with the transition leg surface resting on the inward groove surface and the end side of the radially outer leg resting against the outward surface of the groove, the outward leg of the holding ring is under initial tension, and

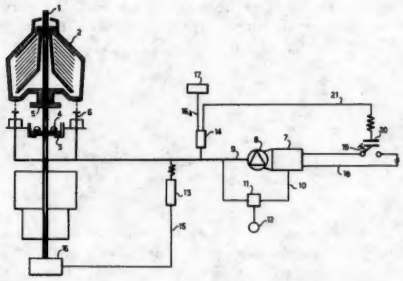
an inner seal for the bushing disposed between the outward end of the rollers and the transition leg of the holding ring and being sized for sealing the annular space between the pin and the outer bushing.

4,614,447

ROTARY MACHINE, IN PARTICULAR A CENTRIFUGE HAVING A MEANS FOR PROTECTING THE ROLLING BEARINGS

Claude Antoine, Dampierre, and Bruno Zuckmeyer, Marly Le Roi, both of France, assignors to Guinard Centrifugation, Saint-Cloud, France

Filed Jun. 21, 1984, Ser. No. 623,241
Claims priority, application France, Jul. 5, 1983, 83 11160
Int. Cl.[4] B04B *9/08*; F16C *27/00, 35/08*
U.S. Cl. 384—616 5 Claims



1. A rotary machine comprising, mounted on a motor vehicle:
- a fixed portion;
- a rotary portion;
- a rolling bearing for supporting said rotary portion on said fixed portion, said rolling bearing having revolving members mounted on one of said portions and a track on the other of said portions on which said revolving members roll;
- jack means for separating the revolving members and the track;
- drive means for driving said rotary portion;
- inhibiting means coupled between said jack means and said drive means for preventing rotation of said rotary portion while the revolving members and the track are separated; and
- motion prevention means for preventing the vehicle from being set in motion unless the jack means has separated the revolving members and the track.

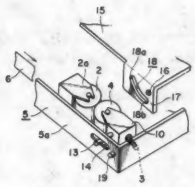
4,614,448

RIBBON CASSETTE CAM MEANS TO SELECTIVELY SEPARATE INK RIBBON FEED AND PINCH ROLLERS

Masayuki Suzaki, Fujisawa; Shoji Nishiwaki, Machida, and Toshitaka Hayashima, Hatano, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jun. 11, 1984, Ser. No. 619,035
Claims priority, application Japan, Jun. 10, 1983, 58-103999; Jul. 29, 1983, 58-118199[U]
Int. Cl.[4] B41J *32/00*
U.S. Cl. 400—208 7 Claims

1. An ink ribbon feeding mechanism comprising:
- a housing provided with first guide means extending over a distance to define a predtermined path;
- a first roller;
- first holding means for rotatably holding said first roller fixed in position;
- a second roller;
- second holding means for rotatably holding said second roller, said second holding means being movable along said predetermined path so as to bring said second roller into or out of contact with said first roller and including at least one guide member engageable with said first guide means so that said second holding means is movable along said first guide means;
- biasing means for normally biasing said second holding means in a predetermined direction along said predetermined path such that said second roller is pressed against said first roller with ink ribbon to be fed being sandwiched therebetween;
- means for keeping said second holding means at a retracted position along said predetermined path thereby allowing to keep said second holding means separated away from said first roller; and



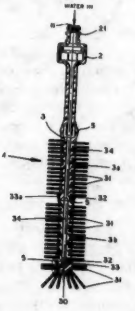
- a top cover pivotally connected to said housing and provided with a bracket section, whereby said keeping means includes a guide projection integrally provided on said second holding means, a straight guide slot formed in said housing as extending straight and an arcute guide slot formed in said bracket section, said guide projection extending through said straight and arcuate guide slots thereby allowing to move said second holding means along said first guide means to move said second roller to be in contact with or separate away from said first roller automatically when said top cover is pivoted closed or open.

4,614,449

WATER-DISPENSING CLEANING BRUSH WITH DEFLECTING MEANS

Harald Körfgen, Hagen; Werner Geipel, Iserlohn, and Bruno Heimann, Fröndenberg-Ardey, all of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 643,997
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330487
Int. Cl.[4] A46B *11/00, 11/06*
U.S. Cl. 401—287 6 Claims



1. A brush for cleaning articles, comprising:
- a hollow handle communicating with a fluid source and defining a handle axis; and
- a brush body connected to said handle and formed with a passage for a fluid from said source, said brush body being provided with an array of radial bristles surrounding and

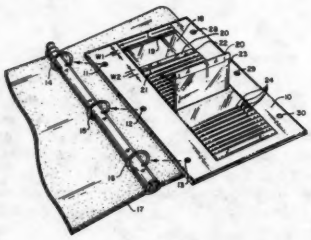
along said axis, and deflecting means for directing the fluid out of said passage onto said bristles at an acute angle with respect to said axis, said brush body being provided with a plurality of slots radially extending from said passage in one plane, said deflecting means having a generally frustoconical rim portion outwardly of the body projecting beyond said plane of said slots and diverging outwardly in the direction of said array of bristles so that the fluid flowing through said hollow handle and said passage is discharged through said slots and deflected by said rim portion toward said bristles at an acute angle.

4,614,450

PORTABLE INDEX CARD HOLDER FOR NOTEBOOKS

Rhoda Neiman, 2212 California Ave., Santa Monica, Calif. 90403

Filed Oct. 13, 1983, Ser. No. 541,543
Int. Cl.[4] B42F *7/00, 17/20*
U.S. Cl. 402—79 **3 Claims**



1. A portable index card holder for a notebook including, in combination:

(a) a support member having means along at least one marginal edge for securing the member in a notebook;

(b) a plurality of transparent, horizontally disposed rectangular sheets each of dimensions larger than an index card;

(c) heat seal means extending along the top longitudinal lengths of said sheets at equally vertically spaced horizontal areas along a central portion of said member between the top and bottom holding a top marginal area of given width of each sheet to said member so that said sheet can be turned upwardly, said heat seal means functioning as a hinge;

(d) a folded strip of a length corresponding to the longitudinal length of each sheet and of a second given width defining a V-shape in cross section straddling the bottom edge of each sheet; and

(e) heat seal means extending transversely at each end of said folded strip along its said second given width to secure the same to its corresponding sheet only at said ends whereby front and rear pockets are defined adjacent to the lower end of each side of each sheet for receiving an index card in each side, one index card received in the front pocket having its rear side visible through said sheet when the sheet is turned upwardly and any card in the rear pocket is removed.

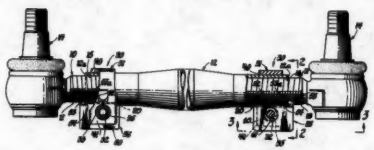
4,614,451

TURNBUCKLE CLAMP ASSEMBLY WITH ORIENTATION WASHER

Leon O. Braisted, Jr., Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1985, Ser. No. 794,426
Int. Cl.[4] F16B *7/06*
U.S. Cl. 403—14 **2 Claims**

1. In a coupling clamp turnbuckle assembly for use with a ball and socket assembly of the type having the socket of the ball and socket assembly providing an externally threaded tie rod extending therefrom, said assembly including a tubular turnbuckle having internal threads on at least one end thereof for threaded engagement with the external threads on the tie rod and having a slot in the one end of the turnbuckle of predetermined axial extent, an adjustable clamp assembly including a clamp and a fastening and tightening means, said clamp consisting of a split ring clamp encircling the one end of the tie rod, the split ring having a pair of clamp lugs extending from the ends thereof, the clamp lugs in the free form of the split ring clamp being in spaced apart relationship to each other, each of the clamp lugs having a bolt receiving aperture extending therethrough receiving the fastening and tightening means which includes a bolt having a head and an externally threaded shank extending therefrom on the free end of the externally threaded shank of the bolt; the improvement comprising an



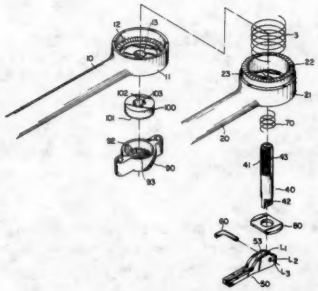
orientation washer of an L-shaped configuration with a washer portion of substantially rectangular configuration and having an aperture therethrough loosely receiving the shank of the bolt whereby said orientation washer is loosely positioned between the clamp lugs of the split ring clamp as supported by the bolt so that a longitudinal end of said orientation washer is loosely received in the slot of the turnbuckle, said orientation washer including a locating tab angled out of the normal plane of the said washer portion located so as to abut against the slotted said one end of said turnbuckle whereby both radially and longitudinally orientation of the clamp on the turnbuckle can be effected so that a desired clamp force can be applied to the turnbuckle onto the tie rod of the ball and socket assembly during torque down of the nut on the bolt.

4,614,452

ANGLE ADJUSTING DEVICE

Cheng H. Wang, 9-3, Hai Wei Tze Lane, Chung Yang Rd., Chung Ho Tsun, Lung Ching Hsiang, Tai Chung Hsien, Taiwan

Filed Feb. 28, 1984, Ser. No. 584,444
Int. Cl.[4] B25G *3/00;* **F16D** *1/00*
U.S. Cl. 403—27 **3 Claims**



1. An angle adjusting device comprising:

a first rod having a first head, said first head having a first annular toothed portion, and a first through hole coaxial with said first annular toothed portion;

a second rod having a second head, said second head having a second annular toothed portion for meshing said first

annular toothed portion, and a second through hole coaxial with said second annular toothed portion;

a first spring member disposed between said first head and said second head for biasing said second annular toothed portion from said first annular toothed portion;

an axle having a first end and a second end;

a fastening member mounted on said first end of said axle to hinder said first head from slipping off said axle;

a lever pivoted with said second end including a cam surface abutting said second head for varying the axial position of said axle relative to said second head, whereby through cooperation with said fastening member, a variation of the relative position of said axle to said second head will drive said second annular toothed portion to engage or disengage said first annular toothed portion, wherein the teeth of said first annular toothed portion and said second annular toothed portion are inclined in one direction and said cam surface includes a segment to abut said second end for driving said first annular inclined toothed portion to partly engage with said second annular inclined toothed portion, and further comprising a second spring member disposed to slightly bias said first annular toothed portion toward said second annular toothed portion when said first and second annular toothed portion are partially engaged so as to permit uni-directional adjustment of angle between said first rod and said second rod.

4,614,453

METAL-CERAMIC COMPOSITE BODY AND A METHOD OF MANUFACTURING THE SAME

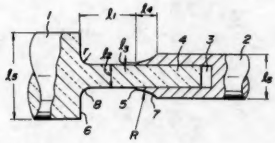
Nobuo Tsuno, Kasugai, and Yoshihiko Ishida, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Nov. 1, 1984, Ser. No. 667,205

Claims priority, application Japan, Nov. 9, 1983, 58-209226

Int. Cl.[4] F16B *9/00;* **F01D** *5/28;* **F01L** *1/14*

U.S. Cl. 403—30 **11 Claims**



1. A metal-ceramic composite body comprising:

a ceramic member having a large diameter portion with a front surface and a back surface and an integral small diameter portion extending from said back surface thereof; and

a metallic member including a main body portion and an insertion edge portion, said main body portion having recess means said insertion edge portion including an insertion edge surface, said insertion edge portion having a thickness which gradually increases from said insertion edge surface toward said main body portion such that said increase in thickness has an outer radius of curvature of not less than 0.4 times as large as the small diameter portion of the ceramic member, said insertion edge portion forming an outer opening of said recess means such that said small diameter portion of the ceramic member is fitted into said recess means and a sapce of not less than the diameter of the small diameter portion of the ceramic member is provided between the insertion edge surface of the metallic member and the back surface of the large diameter portion of the ceramic member.

4,614,454

BABY CARRIAGE GRIP ROD LOCKING MECHANISM

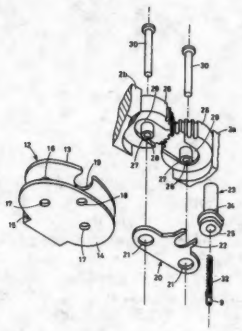
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Filed Jan. 3, 1985, Ser. No. 688,619

Claims priority, application Japan, Jan. 11, 1984, 59-4101

Int. Cl.[4] F16C *11/00*

U.S. Cl. 403—62 **6 Claims**



1. A locking mechanism for locking a foldable grip rod of a baby carriage in a straight, unfolded state, comprising: two grip rod sections having inner rod ends facing each other, a gear member at each inner rod end, coupling means for foldably interconnecting said grip rod sections and for supporting said gear members so that said gear members are rotatable around their respective axes, two locking recesses, one formed in one side wall of each of said gear members, two bosses (27), one extending out of each of said recesses, a locking member having two spaced through-holes (21) for receiving said two bosses, whereby said locking member is movable axially along said bosses of said gear members, said locking member being capable of simultaneously resting in both locking recesses when said grip rod is in it straight state for arresting said grip rod sections in said straight state, a spring for urging said locking member into said locking recesses for said arresting, an operating member for disengaging said locking member from said locking recesses against the force of said spring by axially moving said locking member guided by said bosses in said through-holes, and means for tiltably supporting said gear members in said coupling means.

4,614,455

FLEXIBLE JOINTS OR BEARINGS

John B. Skipper, Lutterworth, England, assignor to Dunlop Limited a British Company, England

Filed Apr. 29, 1985, Ser. No. 728,213

Claims priority, application United Kingdom, May 9, 1984, 8411756

Int. Cl.[4] F16C *11/00*

U.S. Cl. 403—133 **11 Claims**

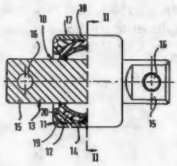
6. A flexible ball-type joint or bearing comprising:

a layer of elastomeric material which extends around an inner rigid member of part-spherical shape;

an outer rigid member which extends around the layer of elastomeric material and inner rigid member and maintains the layer of elastomeric material in residual compression between said rigid members;

the outer rigid member comprising a pair of end abutments for axial location of the layer of elastomeric material, and between said end abutments a tubular body portion within which is provided an annular member which defines a part-spherical shape surface for contact with the layer of

elastomeric material and is formed from a material having a modulus of elasticity which is higher than that of the



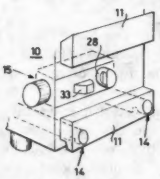
layer of elastomeric material and less than that of the outer rigid member.

4,614,456

SYSTEM FOR THE BIDIRECTIONAL LOCATION AND LOCKING OF MOBILE MEMBERS IN A REPETITIVE POSITION

Alberto Cattani, Modena, Italy, assignor to COMAU S.p.A., Grugliasco, Italy

Filed Oct. 25, 1983, Ser. No. 545,343
Claims priority, application Italy, Nov. 5, 1982, 53891/82[U]
Int. Cl.⁴ F16B *21/00*; B23Q *3/155*
U.S. Cl. 403—322 **7 Claims**



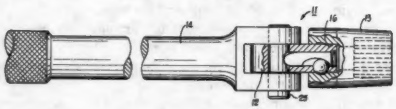
1. Apparatus for the bidirectional precision location and locking of a mobile member in a repetitive position relative to a fixed member, the fixed member having a slideway thereon along which the mobile member slides along a first axis, the mobile member having an abutment thereon having two opposing sides, means mounted on the fixed member for grasping and releasing said two opposing sides of the abutment to position the mobile member along said first axis, the mobile member having projections thereon, the fixed member having members thereon extensible and retractable into and out of engagement with said projections on the mobile member to lock the mobile member along second and third axes orthogonal to said first axis and to each other.

4,614,457

COUPLING MECHANISM

James P. Sammon, 12608 Crossburn Ave., Cleveland, Ohio 44135

Filed Jul. 15, 1985, Ser. No. 755,017
Int. Cl.⁴ F16D *1/00*
U.S. Cl. 403—322 **19 Claims**



1. A coupling mechanism to couple a male to a female member, said coupling mechanism comprising, in combination:

an elongated shaft having said male member at a first end thereof and having a second end remote from said first end;

a longitudinal axis of said elongated shaft;

said elongated shaft adapted to be rotated about its said longitudinal axis to impart rotation to said male and female members about said longitudinal axis;

a detent member in said coupling mechanism movable laterally in a recess in said male member;

a transverse pin slidable transverse to said longitudinal axis in a transverse aperture in said male member at a position close to said female member;

linkage means acting between said transverse pin and said detent member;

a can and a cam follower in said linkage means acting on said detent member;

urging means acting through said linkage means on said detent member; and

said transverse pin having lateral travel in opposite directions into first and second opposite positions;

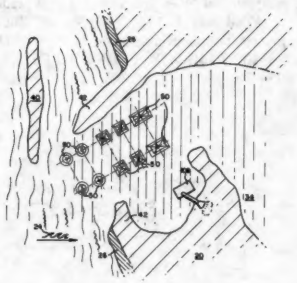
said first position of said transverse pin establishing said detent member urged laterally outwardly adapted for coupling engagement with a lateral wall of said female member, and said second position of said transverse pin permitting said detent member to move laterally inwardly to uncouple said male and female members.

4,614,458

PERMANENT DREDGE SYSTEM

Stephen B. Austin, 959 Penn Cir., King of Prussia, Pa. 19406

Filed Jun. 20, 1984, Ser. No. 622,861
Int. Cl.⁴ E02B *8/02*
U.S. Cl. 405—74 **16 Claims**



1. A permanent dredging system for maintaining a desired bottom contour across an area of a watercourse by intermittent removal of accumulating sediment, the accumulating sediment defining an accumulation contour higher than the desired contour, the system comprising:

a plurality of spaced slurry intakes mounted in a matrix pattern at least as low as said bottom depth, the intakes being spaced at least in two dimensions such that the plurality of intakes remove sediment from an area having a substantial length and width, and each of said intakes being an upwardly-directed funnel having sides sloping inward at an angle at least as great as an angle at which said sediment will slide, the funnel having a central flow opening;

a conduit network in fluid communication with the openings of the slurry intakes; and,

a suction pump connected to the conduit network, operable to draw fluid and sediment into the intakes, whereby operation of the suction pump removes materials at and between the intakes, approaching the desired bottom contour.

4,614,459

FLOATING TUBE APPARATUS FOR PROVIDING A SEALED REVERSIBLE AND REMOTE-CONTROLLED CONNECTION BETWEEN DUCTS IN PARTICULAR UNDERWATER DUCTS

Roland Labbé , Sainte Luce sur Loire, and Francis Rodriguez, Vertou, both of France, assignors to Alsthom-Atlantique, Paris, France

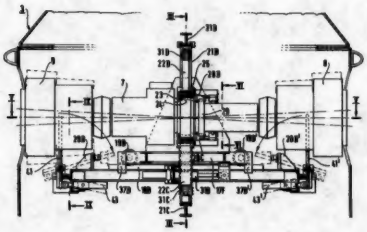
PCT No. PCT/FR84/00286, § 371 Date Jul. 18, 1985, § 102(e) Date Jul. 18, 1985, PCT Pub. No. WO85/02652, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 5, 1984, Ser. No. 758,628

Claims priority, application France, Dec. 7, 1983, 83 19569

Int. Cl.[4] F16L *1/04*

U.S. Cl. 405—170 10 Claims



1. A floating tube apparatus having a floating tube (7) for sealed reversible and remote-controlled connection of ducts (4, 11), in particular underwater ducts, provided with connectors (6, 10) at their ends which are complementary to connectors (8, 9) carried at the ends of said floating tube (7) and which prior to connection have a position which is at least approximately determined in a range of admissible tolerances, in such a manner as to enable successive connection of one of the ducts (4) whose connector (6) is at least displaceable in a sealed manner upon being locked to the corresponding connector (8) of the floating tube (7) when displaced longitudinally under remote-control, and then of the other duct (11) upon locking of the connector (10) of said other duct to the corresponding connector (9) of the floating tube after longitudinal displacement in the opposite direction to the previous direction of the floating tube (7) and of at least the connector (6) of the first connected duct; the improvement comprising:

a positioning device (17, 21, 22, 23, 24) for positioning the floating tube (7),

a fixed structure (18) defining a rectilinear rolling path (18A, 18B) along a reference plane on which the positioning device is displaceable,

said positioning device comprising a ball joint (23, 24),

three carriages (17, 21, 22) mounted on one another supporting said ball joint in such a manner as to enable each of said carriages to move rectilinearly along a displacement axis which is perpendicular to the displacement axes of the other two carriages,

said carriages including a transfer carriage (17),

at least one remote-controlled jack (31A) for moving said transfer carriage (17) on said rectilinear rolling path (18A, 18B) of the fixed frame,

said three carriages including a carrying carriage (22) carried by the two other carriages and directly supporting the ball joint (23, 24),

said floating tube (7) being hinged by said ball joint (23, 24) surrounding the middle portion of said tube (7) in such a manner as to enable proper connection of the tube connectors with the duct connectors by self-centering prior to locking and to continuously align the internal channels of the ducts by virtue of pointing the floating tube (7) in various directions at the ball joint and displacing the carrying carriage (22) relative to the fixed structure from a predetermined equilibrium position.

4,614,460

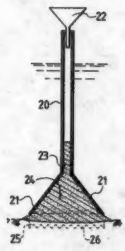
SUPPORT STRUCTURE

Klas Heyman, Ängemarken 8 B, Gothenburg, Sweden

Continuation of Ser. No. 394,799, Jul. 2, 1982, abandoned. This application Aug. 21, 1984, Ser. No. 642,701

Int. Cl.[4] E02B *17/08;* E02D *29/00*

U.S. Cl. 405—195 7 Claims



1. A structure for transferring a vertical load to a supporting surface in a body of water wherein the supporting surface has a known load-carrying capacity comprising, a single hollow conically-shaped member of rigid material having a base adapted to be set substantially level on the supporting surface and a smaller open upper end, a single hollow rigid pillar in the shape of a circular cylinder attached at one end to said upper end of said conically-shaped member and extending substantially vertically therefrom and having a substantially uniform cross-sectional area throughout its length and an open upper end, the cross-sectional area of said base being several times larger than the cross-sectional area of said pillar, and a continuous mass of friction material filling said conically-shaped member to form a support therein having an outer surface shaped to conform to the inner surface of said conically-shaped member, and at least partly filling said pillar, said conically-shaped member, pillar and friction material forming a single unitary individual and independent support, the base angle of said conically-shaped member being slightly larger than the angle of repose of the friction material and being of such a value that the conically-shaped member is completely filled and the interior surface thereof is entirely supported on said friction material and the vertical forces on the support structure are entirely supported by the friction material and are distributed vertically and substantially evenly over the area of the supporting surface beneath the base, and the weight of the support structure per unit area of the supporting surface covered by the base is minimized.

4,614,461

TENDON OF TLP AND ELECTRICAL CORROSION PROTECTING METHOD OF THE SAME

Yasuyuki Taniguchi, Kimitsu; Kotaro Yoshida, Sagamihara; Yasuhira Takeshi, Sagamihara; Teruo Michishita, Sagamihara; Michio Kawai, Kitakyushu, and Makoto Kawakami, Sagamihara, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 5, 1985, Ser. No. 772,743

Claims priority, application Japan, Sep. 7, 1984, 59-186564; Nov. 16, 1984, 59-241950

Int. Cl.[4] C23F *13/00;* E02B *17/00;* B63B *35/44*

U.S. Cl. 405—211 7 Claims

1. A tendon of a tension leg platform, comprising:

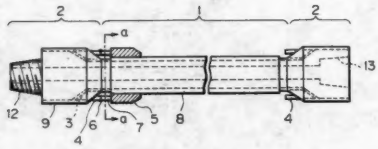
straight steel pipes having an outer surface and an inner surface;

screw couplings fastened on the straight steel pipes at their

ends, each pair of which screw couplings being coupled with one another by threads;

convex and concave shaped, fastening means for fastening said screw couplings to the straight steel pipes, formed on an outer circumferential surface of said screw couplings;

an insulative, corrosion-protective coating formed on the outer surface of said straight steel pipes, having a damage resistance against any force exerted thereto prior to and during installation of the tendon as well as during service of the tendon;



a sprayed aluminum layer formed on an outer surface of each screw coupling and having ends contiguous to ends of said insulative, corrosion-protective coating; and

a galvanic current anode attached to, and surrounding each straight steel pipe and electrically connected to said sprayed aluminum layer for electrically protecting it and also electrically connected to each straight steel pipe via said electrically connected sprayed aluminum layer, for electrically protecting any exposed area of said straight steel pipe during a service life of the tendon.

4,614,462

ROTATION DEVICE FOR A FOUNDATION PILE

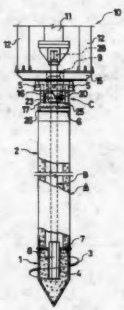
Yoshitaka Itou, Ebinashi, Japan, assignor to Daido Concrete Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1985, Ser. No. 735,089

Claims priority, application Japan, May 18, 1984, 59-100265

Int. Cl.[4] F02D *7/00*

U.S. Cl. 405—232 **15 Claims**



1. Apparatus for installing a foundation pile into the ground comprising:

a clutch assembly having first and second clutch members, said first and second clutch members respectively comprising first and second pawl means for transmitting torque therebetween by contact between respective sloped surfaces thereof;

a fixing plate, mountable on an upper portion of said foundation pile, engageable with said clutch assembly, and comprising means for transmitting torque from said clutch assembly to said upper portion of said foundation pile; and

a rotation rod comprising first and second driving blocks axially spaced thereon, said first driving block comprising means for transmitting torque from said rotation rod to said clutch assembly, said second driving block comprising means for non-rotationally engaging a lower portion of said foundation pile and for transmitting torque from said rotation rod to said lower portion of said foundation pile.

4,614,463

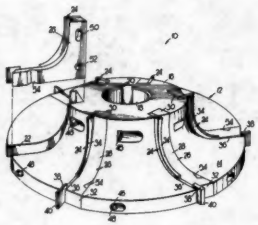
CUTTER HAVING REMOVABLE CUTTING BLADES

Chesley P. Hughes, 2124 Hilton Dr., P.O. Box 5399-WSB, Gainesville, Ga. 30501

Filed Sep. 11, 1985, Ser. No. 774,982

Int. Cl.[4] B26D *1/00*

U.S. Cl. 407—49 **7 Claims**



1. In a cutting arrangement for mounting on a power shaft to be rotated thereby:

a circular cutter body having an axis of rotation a plate portion and a curved hub portion and a coaxial opening therethrough for mounting on a rotatable shaft,

a plurality of spaced blade slots extending radially inwardly from the edge of the plate and axially through a portion of the hub,

a respective blade assembly removably mounted in a respective blade slot, each blade assembly comprising a cutting blade having a radially curved cutting edge portion and a straight cutting edge portion, and

blade retaining means including a mounting block on said cutting body for removably holding said blade in place.

4,614,464

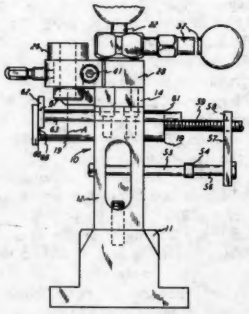
ADJUSTABLE JIG FOR HOLE FORMATION

Harry N. Christensen, 3019 Olive St., Racine, Wis. 53403

Filed Jul. 12, 1985, Ser. No. 754,150

Int. Cl.[4] B23B *47/28*

U.S. Cl. 408—104 **6 Claims**



1. An adjustable jig for hole formation, comprising a base, a movable clamp on said base for fixedly holding a workpiece, a

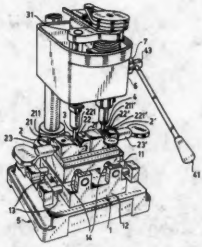
mounting member on said base, an arm swingably mounted on said mounting member for swinging movement to an operative position in the vertical plane above said workpiece and being sufficiently narrow and swingable about said mounting member to achieve an inoperative position clear of said vertical plane, a forming tool bushing on the swinging end of said arm and having a hole extending therethrough and with the hole having a longitudinal axis alignable with said workpiece when on said vertical plane for having said bushing guide a forming tool onto said workpiece in the operative position of said arm, an adjustable stop on said base and in the swinging path of said arm for abutting said arm to limit swinging movement of said arm toward the operative position of said arm, and means for releasably holding said arm in the operative position.

4,614,465

CAVITY KEY DUPLICATING MACHINE

Kuo-shen Wu, No. 10, Alley 14, Lane 74, Pa Te Road, Section 3, Taipei, Taiwan

Filed Mar. 2, 1984, Ser. No. 576,734
Int. Cl.[4] B23C *3/35*
U.S. Cl. 409—81 **3 Claims**



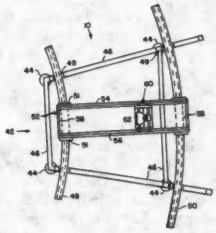
1. A cavity key duplicating machine comprising:
a base,
a lower carriage mounted on said base,
an upper carriage mounted on said lower carriage,
a pair of left and right vises mounted on said upper carriage for holding a key sample and a key blank,
a case mounted on said base,
an upright guide carried by said case,
an upright drill carried by said case,
said lower carriage is slidably secured on said base by means of a first pair of guide posts horizontally, laterally and parallely supported on said base,
said upper carriage is slidably secured on said lower carriage by means of a second pair of guide post horizontally, longitudinally and parallelly supported on said lower carriage in order that said pair of left and right vises can be moved to a desired position by movement of said upper and lower carriages along said pairs of guide posts,
said upright guide is uprightly mounted on an arm extension extended from the upper end of said upright drill in order to be moved upward and downward together with said upright drill by means of a pinion rotatably secured on said case and a rack mounted on said upright drill, so that when said upright guide is inserted in a cavity of said key sample, said upright drill can drill an identical cavity in said key blank, and
said pair of left and right vises each comprises a fixed jaw having a flight of steps for supporting a key sample, a movable jaw having a flight of steps having a smaller width than that of the said steps in said fixed jaw, and a screw disposed between said fixed jaw and movable jaw for driving said movable jaw towards said fixed jaw in order to hold various key samples or key blanks.

4,614,466

DAMAGED RADAR RADOME REPAIR DEVICE

Howard E. Snyder, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 1, 1984, Ser. No. 616,454
Int. Cl.[4] B23C *3/02*
U.S. Cl. 409—179 **7 Claims**



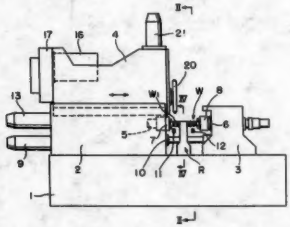
1. An apparatus for repair of a damaged radome, comprising:
a support capable of being affixed to the exterior of said damage radome;
a pair of spaced apart tracks slidably coupled to said support, said tracks being contoured to the local circumference of said damaged radome;
a meridional track device slidably coupled to said pair of spaced apart tracks, said meridional track device having a first and a second track and means for maintaining said first and second tracks in fixed, parallel, spaced apart relationship to one another; and
a router carriage assembly slidably mounted upon said first and second tracks of said meridional track device.

4,614,467

CAM MILLING MACHINE

Masayoshi Takagi, Kariya; Takehiko Hayashi, Toyota, and Fumio Sakamoto, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 16, 1984, Ser. No. 631,202
Claims priority, application Japan, Jul. 20, 1983, 58-132108
Int. Cl.[4] B23C *3/08*
U.S. Cl. 409—199 **5 Claims**



1. A cam milling machine comprising:
a base frame;
first and second support devices mounted on said base frame and horizontally spaced from each other in a first direction;
workpiece support means incorporated in said first and second support devices for carrying a plurality of workpieces at a time at their opposite ends so as to enable said workpieces to be rotated about respective axes extending in parallel relation with each other in said first direction;
workpiece drive means connected to said workpiece support

means for rotating said plurality of workpieces supported by said workpiece support means;

a tool support carrier guided on the top of one of said first and second support devices for sliding movement in said first direction;

a plurality of tool supports guided on said tool support carrier for movement toward and away from said workpieces over the same wherein each of said tool supports rotatably carries a rotary tool;

index feed means connected to said tool support carrier for moving said tool support carrier in said first direction so as to bring each of said rotary tools into radial alignment with one of cam portions formed on an associated one of said workpieces;

tool drive means connected to said rotary tools for rotating said rotary tools;

tool feed means connected to said plurality of tool supports for moving said tool supports in such a manner that each of said rotary tools over said workpieces is moved toward and away from an associated one of said workpieces carried by said workpiece support means; and

an in-line transfer way horizontally extending across a space between said first and second support devices for loading said plurality of workpieces to their machining positions defined between said first and second support devices from one side of said base frame and unloading said plurality of workpieces from said machining positions toward the other side opposite to said one side, of said base frame.

4,614,468

APPARATUS FOR FACILITATING THE ROTATION OF A TOOL-RECEIVING DEVICE

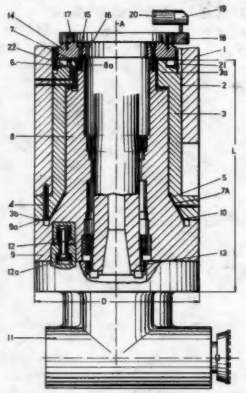
Otto Waldrich, Coburg, and Rolf Eckstein, Roedental, both of Fed. Rep. of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Cobgurg GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Dec. 12, 1984, Ser. No. 680,639

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 8336030[U]

Int. Cl.[4] B23C *1/02*

U.S. Cl. 409—211 **10 Claims**



1. In an apparatus for facilitating a rotation of a tool-receiving device oriented at the free end of a milling spindle carriage, said tool-receiving device being rotatable by means of ring gear means driven by a servomotor about an axis of a milling spindle into predetermined angular positions, said tool-receiving device further being centerable by means of a centering mechanism relative to said milling spindle axis and still further being fixable in the adjusted angular position by means of several hydraulically operable clamping elements which act in axial direction of said milling spindle, the improvement comprising wherein in said milling spindle carriage there is secured an elongated bushing which is concentric with respect to said milling spindle axis, said bushing having at its free end means defining a conical receiving opening, wherein a support sleeve is rotatably supported in said bushing by means of radial and axial bearings, said support sleeve having at its free end a fastening flange for said tool-receiving device, said support sleeve also having above said fastening flange a centering cone conforming in shape to said receiving opening and being received in said receiving opening, wherein a further bearing is provided and interpositioned between said centering cone and said receiving opening for effecting a uniform spacing therebetween, wherein said milling spindle is supported in said support sleeve, and wherein said clamping elements include means for effecting an urging of said bushing and said support sleeve toward each other so that said centering cone is urged against said conical receiving opening.

4,614,469

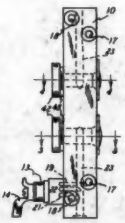
MULTIPLE COLLET WORK-PIECE HOLDER

Richard F. Beere, 27234 Washington Ave., Waterford, Wis. 53185, and Harry N. Christensen, 3019 Olive St., Racine, Wis. 53403

Filed Aug. 31, 1984, Ser. No. 645,866

Int. Cl.[4] B23B *31/30*

U.S. Cl. 409—219 **2 Claims**

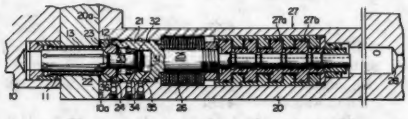


1. A multiple collet work-piece holder, comprising a block having plurality of openings therein and having first fluid passageways separately extending to said openings at a location on each of said openings, a collet retainer disposed in each of said openings and having an axial opening therethrough, fluid seals extending between said retainer and said block on both sides of said location for fluid sealing fluid flow in said openings, each of said retainers having a fluid passageway therein forming a fluid flow passageway from said location to the interior of said retainers and presenting a plurality of cylindrical bores in said retainers, connecting means extending between each of said retainers and said block for preventing rotation of said retainers in said openings, a fluid piston movably disposed in each of said cylindrical bores in said retainers and exposed to fluid pressure in said bores and having a piston reciprocating line of movement which is parallel to said axial opening, a collet disposed in each said axial opening and having a work-piece receiving opening therein co-axial with said axial opening for receiving a work-piece to be clamped by said collet, a connector extending between said retainer and said collet for non-rotational movement therebetween while allowing axial movement of said collet relative to said retainer, a projection affixed to said collet and in contact with said pistons for clamping said collet upon axial movement of said pistons in response to fluid pressure in said fluid passageways, release means interposed between said projection and said block for releasing said collet from clamping the work-piece, and a fluid valve operative on each said first fluid passageway for separately controlling fluid pressure at said piston and thereby separately clamp each of said collets.

4,614,470
AUTOMATIC MOUNTING AND DISMOUNTING APPARATUS OF ATTACHMENTS

Sato Mitsuharu, Numazu, and Katabira Torao, Shizuoka, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1985, Ser. No. 757,737
Claims priority, application Japan, Jul. 27, 1984, 59-156584
Int. Cl.[4] B23C *1/00*
U.S. Cl. 409—230 **4 Claims**



1. Apparatus for mounting and dismounting an attachment onto and from a spindle head or ram of a machine tool having a rotatable spindle comprising:

a collet including a plurality of flexible members extending in parallel with said spindle from a surface on which said attachment is to be mounted, said flexible members being arranged in a circumferential direction,

each flexible member being provided with a radially extending head;

a clamping rod having an opening facing said surface, a small inner diameter projection formed on an inner surface of said opening, and a large inner diameter portion adapted to receive said heads;

means for reciprocating said clamping rod toward and away from said collet;

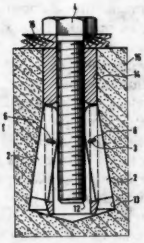
a release piston reciprocated in said clamping rod for radially expanding said heads of said collet; and

drive means for reciprocating said release piston.

4,614,471
EXPANSION ANCHOR

Bernd Mauritz, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft

Filed Mar. 27, 1984, Ser. No. 593,812
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1983, 3311264
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—21 **5 Claims**

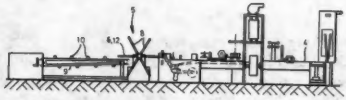


1. Expansion anchor for insertion into an axially extending hole formed in a receiving material where the hole has an axially extending undercut section spaced inwardly from the surface of the receiving material in which the hole is formed, comprising an axially elongated anchoring sleeve having a circumferentially extending outside surface, an axially elongated fastening bolt, and locking members mounted in said anchoring sleeve and being elongated in the axial direction of said sleeve, each of said anchoring sleeve, fastening bolt and locking members having a leading end and a trailing end extending transversely of the axial direction of said sleeve relative to the direction of insertion of said expansion anchor into the hole in the receiving material, said anchoring sleeve having an axially extending bore therein extending from the trailing end toward the leading end with the bore having a threaded section extending from adjacent the trailing end toward the leading end and terminating at a location spaced from the leading end and arranged to receive said fastening bolt in threaded engagement, said anchoring sleeve having a plurality of angularly spaced axially extending slots therein located between the leading end of said anchor sleeve and the threaded section in the bore in said anchoring section, each said locking member mounted and supported in the axial direction of said anchoring sleeve in one of said slots and being displaceable in the radial direction outwardly from said anchoring sleeve between an expansion anchor insertion condition for placement into the receiving material and an expansion anchor locking condition, each said locking member having a first surface and a second surface each extending in the trailing end-leading end direction and said first surface facing inwardly toward the axis of said anchoring sleeve and said second surface facing outwardly in the opposite direction, each said first surface having a first axially extending section adjacent the trailing end of said locking member inclined inwardly toward the axis of said anchoring sleeve in the direction toward the leading end of said locking member, said fastening bolt having an actuating shoulder at the leading end thereof, said first surface located radially inwardly of the prolongation of the leading end of said fastening bolt in the insertion condition, and said actuating shoulder and said fastening bolt extending axially from said actuating shoulder arranged to contact said first section of said first surfaces on said locking members and to displace said locking members radially outwardly into the undercut section of the hole in the receiving material, and in the insertion conditions, said trailing ends of said locking members are located radially outwardly of the path of the actuating shoulder on said fastening bolt, each said locking member has a hole therethrough extending in the circumferential direction of said sleeve with the hole spaced radially outwardly from the first surface of said locking member and radially inwardly from the second surface of said locking member and a spring member extends through said hole in each of said locking members in a plane extending transversely of the axial direction of said sleeve and spaced radially outwardly from said first surface for biasing said locking members into the insertion condition so that the trailing ends of the first surfaces of said locking members are located radially outwardly from the path of said actuating shoulder on said fastening bolt into the bore through said anchoring sleeve.

4,614,472
APPARATUS FOR THE MANIPULATION OF PLASTIC BAGS

Karl Dreckmann, Hennef-Altenbödingen, and Wolfgang Müller, Troisdorf-Kriegsdorf, both of Fed. Rep. of Germany, assignors to Lemo M. Lehmacher & Sohn GmbH Maschinenfabrik, Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,771
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3335945
Int. Cl.[4] B65H *29/06*
U.S. Cl. 414—27 **1 Claim**



1. In an apparatus for the manipulation of plastic bag elements outputted from an automatic bag machine, said apparatus comprising an input conveyor for receiving bag elements output from said automatic bag machine, a delivery unit hav-

ing two outer turnstiles spaced from one another according to the width of said bag elements, and an intermittently operated bag-stacking unit, said turnstiles having suction arms for firmly holding said bag elements grasped from said input conveyor and deposited on the intermittently operated stacking unit, said bag-stacking unit having an endless stacking conveyor provided with a plurality of pegs attached thereto, said pegs being spaced from one another so as to conform to the spacing of said bag elements,

the improvement wherein:

said stacking conveyor has two conveyor chains transversely spaced from one another by an intervening space, each of said chains having respective ones of said pegs attached thereto and upstanding therefrom whereby the pegs of each conveyor chain are adapted to carry respective separated and transversely offset bag elements with handle portions thereof impaled on the respective peg,

said conveyor chains in transversely spaced relationship from one another extend into the turnstile,

said delivery unit includes an additional middle turnstile with a plurality of suction arms positioned in the intervening space between said chains and spaced from but located between said outer turnstiles whereby each arm of said outer turnstiles engages a bottom of a respective bag element while a corresponding arm of said middle turnstile engages the handle portion of the respective bag,

said middle turnstile is formed as a double turnstile with its arms paired so that each pair of arms take up from said input conveyor and deposit upon said stacking unit two separate finished plastic bags lying opposite one another transverse to the transport direction by engagement with respective handle portions, and

said turnstiles are coupled for synchronous rotation.

4,614,473

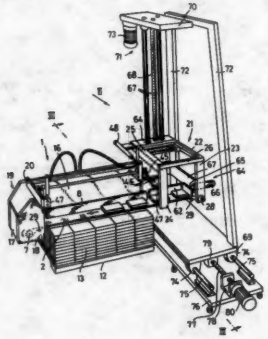
METHOD AND APPARATUS FOR THE STACKING OF RECTANGULAR PRODUCTS

Gerd-Georg Kwaiika, Guetersiob, and Ulrich Kohn, Bielefeld, both of Fed. Rep. of Germany, assignors to Mohndruck Graphische Betriebe GmbH, Fed. Rep. of Germany

Filed Apr. 17, 1984, Ser. No. 601,285

Int. Cl.[4] B65G *57/24*

U.S. Cl. 414—68 **13 Claims**



1. A stacking device, comprising:

a stacking arm having an endless conveyor belt diverted at its end about a roller and having an upper span, a lower span, and a horizontal intermediate plate, said plate being arranged between the upper and lower spans and can be moved forward and back in the direction perpendicular to the direction of the belt; and

a downwardly directed sweep being arranged above the upper span of the conveyor belt, said sweep being movable forward and back and up and down as well;

wherein the stacking arm has a box frame design with a torsion-resistant rear wall, on the left side of which is arranged a box frame which includes an outer wall, a front wall, and an inner side brace in the upper open area, whereby the diverting roller of the conveyor belt is mounted in the lower area of the front and rear walls, and the floor of the box frame design of the stacking arm is formed by the conveyor belt-intermediate plate arrangement.

4,614,474

DEVICE FOR EXCHANGING DISKS

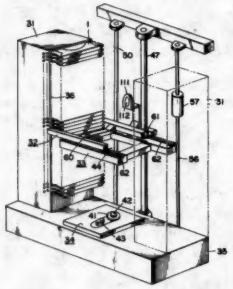
Yoshihiro Sudo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,532

Claims priority, application Japan, Aug. 31, 1983, 58-159723; Sep. 1, 1983, 58-159729

Int. Cl.[4] B65G *1/02*

U.S. Cl. 414—281 **12 Claims**



1. A device for exchanging disks for an optical disk player with a disk table and an optical pickup adjacent to the table, said device comprising a first disk container and a second disk container being mounted on opposite sides of the disk table of the player and in opposition to each other, each container having means for supporting disk caddies, each of said disk caddies having a disk support being profiled for mating with a disk placed flat therein, means for positioning the disk in said disk support, and having an opening large enough to pass the disk table and to permit movement of the optical pickup therethrough, said disk being removably carried by said disk caddy; a disk extracting unit including a moveable member with first and second means for releasably holding a disk caddy, said extracting unit being interposed between said first and second disk containers and above the disk table, said movable mamber of the unit being horizontally movable between a first position and a second position for extracting disk caddies contained in said disk containers and said unit with said member being vertically movable from a level of each of said first and second positions to a working position with said disk table engaging the disk in the caddy being held thereby, said first and second means each have a pair of hook members actuated by electromagnetic means when said disk extracting unit is in said first and second positions, and said first and second means being provided in said movable member in relation to each other and the distance between the first and second positions with the movable member in the first position having the hook member of the first means at a stand-by position capable of gripping opposite side edges of a disk caddy contained in said first disk container and the hook members of the second means being positioned to hold a caddy gripped thereby in a midposition vertically aligned over the disk table and with the movable member in the second position having the hook members of the

second means being in a stand-by position for gripping opposite side edges of a disk caddy in the second container and the hook member of the first means positioning a caddy held thereby in said midposition.

4,614,475

HYDRAULIC CIRCUIT SYSTEM FOR CIVIL ENGINEERING AND ARCHITECTURAL MACHINERY

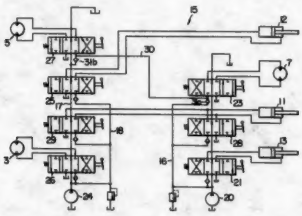
Seiji Tamura; Toshimichi Ikeda, and Toichi Hirata, all of Ibaraki, Japan, assignors to Hitachi Construction Machinery Company, Inc., Tokyo, Japan

Filed May 28, 1985, Ser. No. 737,884

Claims priority, application Japan, May 2, 1981, 56-67220; Oct. 13, 1981, 56-161982

Int. Cl.⁴ F02F *3/00*

U.S. Cl. 414—694 **6 Claims**



1. A hydraulic circuit system for civil engineering and architectural machinery provided with a base frame means, left and right traveling members mounted to the base frame structure for traveling thereof, a swing mounted to the base frame means for horizontal swinging movement, a boom mounted to the swing for vertical pivotal movement, an arm connected to a forward end of the boom for vertical pivotal movement, and a bucket connected to a forward end of the boom for vertical pivotal movement, said hydraulic circuit system, comprising:

at least first and second hydraulic pumps;

a plurality of hydraulic actuator means including left and right traveling actuators, a swing actuator, a boom actuator, an arm actuator, and a bucket actuator respectively connected to said right and left traveling devices, swing, boom, arm and bucket for driving the same;

a first valve group including a first boom directional control valve connected to said boom actuator for controlling a flow of hydraulic fluid thereto and one of a right traveling directional control valve and a left traveling directional control valve connected to the corresponding one of the right and left traveling actuators for controlling a flow of hydraulic fluid thereto, which are connected to said first pump in parallel with each other;

a second valve group including a swing directional control valve connected to said swing actuator for controlling the flow of hydraulic fluid thereto, a second boom directional control valve connected to said boom actuator for controlling a flow of hydraulic fluid thereto, an arm directional control valve connected to said arm actuator for controlling a hydraulic fluid thereto, and the other of said right and left traveling directional control valves connected to the other of the right and left traveling actuators for controlling a flow of hydraulic fluid thereto, said swing, second boom and arm valves being connected in parallel with each other, and said other traveling directional control valve being connected in tandem relative to said parallel-connected swing, second boom and arm valves at a location downstream thereof so as to be operable to receive a flow of hydraulic fluid from second pump via said swing, second boom and arm valves only when they are in an inactive bypass condition; and

a connecting line directly communicating an inlet port of said one traveling valve and an inlet port of the said other traveling valve with each other to permit hydraulic fluid flow between said inlet ports in either direction through said connecting line so as to comprise a means by which the hydraulic fluid flow is discharged from said first and second pumps and supplied to said right and left traveling valves with said hydraulic fluid flow being to right and left travel motors of the respective hydraulic actuators of the traveling members when loads applied to said motors are substantially equal to each other.

4,614,476

MECHANICAL SUGAR CANE GRAB LOADER

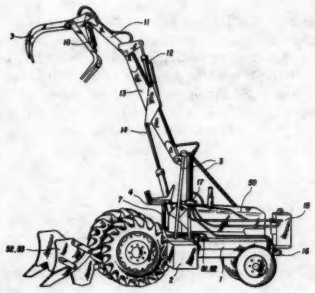
Luis A. C. Mello Ribeiro Pinto, Ribeirao Preto SP, Brazil, assignor to Santal Euipamentos S.A. Comercio E Industria, Brazil

Filed Oct. 3, 1983, Ser. No. 538,382

Claims priority, application Brazil, Oct. 11, 1982, 8206002; Nov. 19, 1982, 8206773; May 3, 1983, 8302267

Int. Cl.⁴ B66C *1/00*; A61B *49/04, 61/04*; E02F *3/76*

U.S. Cl. 414—729 **11 Claims**



1. A sugar cane grab loader, comprising:

an articulated and hydraulically actuated grab;

a hydraulically actuated boom for lifting the grab, said grab being mounted at an end of the boom, said boom being connected to a support structure;

means connected to said support structure for pushing sugar cane on top of soil to form bundles, said bundles adapted to be grabbed by said hydraulically actuated grab, said pushing means comprising: at least two main body plates, said plates being vertically oriented and substantially coplanar with the direction of pushing said cane, said plates being mounted in spaced relationship to one another; and a tooth articulatedly connected to each of said main body plates, each said tooth having a tip extending downwardly and forwardly from each said main body plate, said articulated connections providing means for limiting ground penetration by said tooth tips during said pushing of cane, said limiting occurring substantially without hydraulic control of said teeth and means for automatically lifting said grab a predetermined distance as a bundle of cane is grabbed

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4,614,477

APPARATUS AND METHOD FOR MONITORING AND CONTROLLING THE VOLUMETRIC LOADING OF A TRUCK BODY

Leroy G. Hagenbuch, 4602 N. Rosemead, Peoria, Ill. 61614

Filed Jun. 27, 1983, Ser. No. 508,177

Int. Cl.⁴ B65G *67/04*

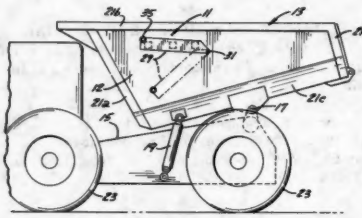
U.S. Cl. 414—786 **7 Claims**

1. A method of preventing the overloading of the weight capacity of an opaque truck body when said truck body is used for hauling several different materials of different density, wherein loading material of a first density to the full volume

capacity of an initially empty truck body does not exceed the weight capacity of said truck body; said method comprising the steps of:

a. loading material of a second greater density into an initially empty truck body;

b. sensing the horizontal distribution of the material of a second density at discrete locations along a predetermined level on said truck body side wall which corresponds to



less than the full volume capacity of said truck body and which defines a maximum loading level for said material of a second density beyond which level the weight capacity of the truck body would be exceeded; and

c. stopping the loading of the material of a second density into said truck body in response to the sensing of an even horizontal distribution of the material at the predetermined level.

4,614,478

PUMP IMPELLER

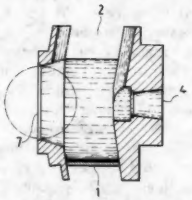
Hannu Sarvanne, Kivivuorenkuja, Finland, assignor to Oy E. Sarlin AB, Helsinki, Finland

Filed May 28, 1985, Ser. No. 738,497

Claims priority, application Finland, Jun. 6, 1984, 842264

Int. Cl.[4] F04D *1/04*

U.S. Cl. 416—19 **4 Claims**



1. In a pump for transmission of solid and liquid sewage, an impeller comprising:

a rotatable body having an axis of rotation and including

a first flange portion of a predetermined radius including means for coupling said body with a rotatable driving shaft,

a second flange portion of a predetermined radius spaced axially from said first flange portion, said first and second flange portions defining therebetween a passage having an axially extensive width, and

vane means, disposed in said passage, for inducing a flow of the sewage through inlet means into said passage and then discharging the induced sewage from said passage when said body is rotated,

said rotatable body further including grooves, of a predetermined constant, maximum width greater than the width of said passage, located in facing surfaces of said first and second flange portions, and extending normal to said axis from said vane means radially outwardly to the radial outermost extent of said flanges, for transmitting, during discharge of the induced sewage from said passage, sewage solids of a width greater than the width of said passage.

4,614,479

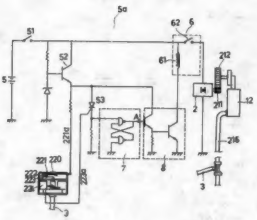
ADJUSTABLE AUTOMATICALLY CONTROLLED PNEUMATIC PUMP DEVICE

Jackson Liu, No. 200, Chien Kuo Rd., Sec. 3, Min Hsiung Hsiang, Chiayi Hsien, Taiwan

Continuation-in-part of Ser. No. 602,228, Apr. 19, 1984, abandoned. This application Oct. 7, 1985, Ser. No. 785,079

Int. Cl.[4] F04B *49/06, 21/00*

U.S. Cl. 417—44 **3 Claims**



1. An adjustable automatically controlled pneumatic pump device comprising:

a housing;

an air pump mounted in said housing;

an electric motor adapted for being energized by a power source to drive said air pump;

an air hose member having an exhaust port at one end, and another end of said hose member connected to said air pump;

a pressure gauge for measuring the pressure in said air hose member which is communicated with said air hose member; said pressure gauge having a pressure indicating pointer and a pressure setting pointer, wherein, said pressure indicating pointer can be displaced proportionally with the pressure being measured during the operation of said adjustable pneumatic pump device, and said pressure setting member can be adjusted in advance according to the predetermined air pressure desired; said pressure indicating pointer being capable of contacting with said pressure setting pointer when the air pressure through said air hose reaches said predetermined air pressure; and

an electric logic circuit device electrically associated with said motor, said pressure setting pointer and said pressure indicating pointer of the pressure gauge, and adapted to be connected to the power source, including an amplified circuit, a relay and a positive-logic cross-coupled NANDS device; wherein an electrical signal can flow into said positive-logic cross-coupled NANDS device when said pressure indicating pointer contacts with said pressure setting pointer so that said positive-logic cross-coupled NANDS device functions as an RS flip-flop at its output end and produces a normal output signal for actuating said relay and stopping said motor, responsive to said electric signal; said amplified circuit connecting to said output signal to determine said amplified circuit device to be in ON or OFF condition.

4,614,480

LIQUID PUMPING SYSTEM

John C. Hardison, 2500 W. Skelley, Tulsa, Okla. 74107

Filed Feb. 6, 1984, Ser. No. 577,578

Int. Cl.[4] F04D *9/04, 17/08*

U.S. Cl. 417—199 A **4 Claims**

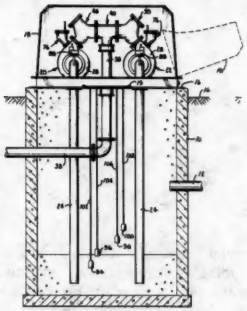
1. In a liquid pumping system:

a pair of horizontal shaft pump units each including a motor,

a pumping impeller operably coupled with the motor for rotation about a horizontal axis, and a volute having an internal chamber receiving said impeller,

each of said volutes having an inlet passage entering the chamber adjacent the center thereof and an outlet passage having an interior intersection with and departing from the chamber in a generally tangential manner,

said volutes being so positioned about their respective said horizontal axes that said outlet passages are inclined upwardly and inwardly toward one another,



each outlet passage being so inclined that no portion of the chamber is higher than the interior intersection between the outlet passage and the chamber;

a single discharge conduit common to both said units; and

means coupling said outlet passages in flow communication with said discharge conduit,

said outlet passages each having external, upwardly and inwardly facing, flat coupling surfaces at the downstream ends thereof disposed at right angles to the inclined axes of the outlet passages for connection with said coupling means.

4,614,481

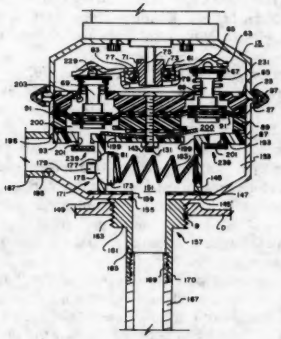
PUMP WITH REPLACEABLE CARTRIDGE

John A. Vanderjagt, 1395 Glen Oaks, Memphis, Tenn. 38117

Filed Jun. 10, 1985, Ser. No. 742,900

Int. Cl.[4] F04B *35/04, 49/00*

U.S. Cl. 417—270 **9 Claims**



1. A diaphragm pump for pumping liquid, said pump comprising:

(a) casing means including a first casing and a second casing and having an inlet port and an outlet port;

(b) coupling means detachably coupling said first and second casings to one another for casing said first and second casings to coact to define an internal cavity with said inlet and outlet ports communicating with said cavity and for allowing said first and second casings to be quickly detached from and coupled to one another, said cavity being exposed when said first and second casings are detached from one another;

(c) unitary replaceable cartridge means mounted within said cavity for drawing liquid into said cavity through said inlet port and for pumping liquid out of said cavity through said outlet port, said cartridge means being freely slidable into and out of said cavity as an integral, unitary part when said first and second casings are detached from one another without requiring any mechanical decoupling of said cartridge means from said casing means other than the decoupling of said coupling means for allowing the quick placement and removal thereof from said cavity, said cartridge means including piston means movable between first and second positions for causing liquid to be drawn into said cavity through said inlet port and pumped out of said cavity through said outlet port; and

(d) driving means attached to said casing means for removably engaging portions of said piston means for the selective driving thereof between said first and second positions when said cartridge means is positioned within said cavity and said first and second casings are coupled to one another by said coupling means.

4,614,482

PRESSURE EQUALIZING DEVICE FOR THE ELECTRIC MOTOR OF AN ENCAPSULATED MOTOR-PUMP ASSEMBLY

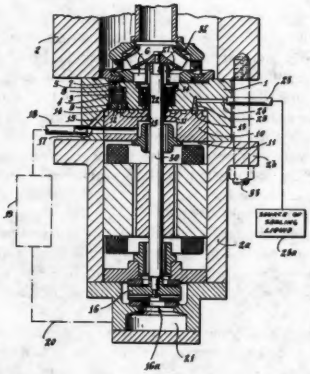
Karl Gaffal, Hessheim, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,001

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120232

Int. Cl.[4] F04B *17/00, 35/00, 39/06*

U.S. Cl. 417—367 **14 Claims**



1. In an encapsulated motor-centrifugal pump assembly, the combination of a liquid-filled pump housing; a liquid filled motor-housing; a shaft extending between and into said housings; a seal disposed around said shaft between said housings; a high-pressure cooler for circulating and cooling the liquid contents of said motor housing; means defining a path for the circulation of liquid from said motor housing to said cooler and from said cooler back into said motor housing; a pressure equalizing device defining at least one chamber arranged to store a supply of liquid for admission into said motor housing and having a mobile wall bounding a portion of said chamber

and subjected to the pressure of liquid in said pump housing; means for connecting said chamber with said path defining means upstream of said cooler so that, when the pressure of liquid in said pump housing rises above the pressure of liquid in said chamber, the mobile wall expels liquid from said chamber into said path defining means and the thus expelled liquid is cooled prior to entering said motor housing; a source of sealing liquid; and means for conveying sealing liquid from said source to said seal and into said chamber so as to compensate for liquid which said mobile wall expels from said chamber.

4,614,483

DEVICE FOR SEALING A CONCRETE PUMP

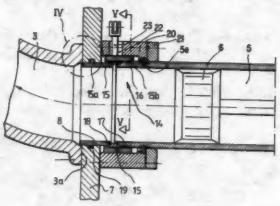
Gerhard Hudelmaier, Sylvanerweg 19, D-7900 Ulm, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 713,254

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410211

Int. Cl.[4] F04B *14/02, 21/00;* F17D *1/14*

U.S. Cl. 417—517 **12 Claims**



1. In a concrete pump having a pair of delivery cylinders which charge and discharge alternately and each of which has a front mouth portion through which it discharges, and a swinging pipe that has a rear end portion which moves from side to side to be aligned with the mouth portion of the delivery cylinder that is discharging, a sealing device for each delivery cylinder, providing a seal between its mouth portion and said rear end portion of the swinging pipe, said device being characterized by:

A. an annular seal body

(1) having an axially slidable sealing connection with the mouth portion of the delivery cylinder,

(2) having an end portion which can project coaxially beyond said mouth portion and towards said swinging pipe, and

(3) being axially movable relative to the delivery cylinder between a sealing position in which its said end portion projects forwardly beyond said mouth portion and sealingly engages said rear end portion of the swinging pipe all around the same and a withdrawn position in which its said end portion is clear of the swinging pipe;

B. said rear end portion of said swinging pipe being formed to receive said end portion of the seal body therein when the seal body is in its said sealing position; and

C. drive means connected with said seal body to move it between its said positions and whereby it is maintained in its withdrawn position whenever the swinging pipe is moving and is maintained in its sealing position while the swinging pipe is aligned with the delivery cylinder.

4,614,484

ROTARY SCREW COMPRESSOR WITH SPECIFIC TOOTH PROFILE

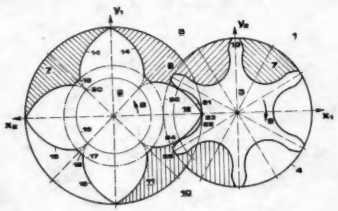
Gerold Riegler, Schweinfurt, Fed. Rep. of Germany, assignor to Boge Kompressoren Otto Boge GmbH & Co. KG, Bielefled, Fed. Rep. of Germany

Filed Dec. 6, 1984, Ser. No. 678,717

Claims priority, application Austria, Dec. 14, 1983, 4348/83

Int. Cl.[4] F04C *18/00*

U.S. Cl. 418—201 **12 Claims**



1. In a parallel axis rotary piston compressor arrangement of the type including a housing accommodating at least two rotor means, said rotor means including a main rotor and a gate rotor edged with tooth spaces extending in a screw-like manner, said main rotor and said gate rotor being arranged to interengage each other with their axes parallel, each of said rotors having a pitch circle, said main rotor including main rotor teeth each having two tooth flanks designed to be substantially convex and located outside of the main rotor pitch circle and said gate rotor including gate rotor teeth having tooth flanks designed to be substantially concave and located within the gate rotor pitch circle, each of said main rotor teeth and said gate rotor teeth having a tooth root and a tooth crest, the improvement wherein each of the two tooth flanks of each of said main rotor teeth comprises a surface conforming to the envelope of a helical plane inclined with respect to the axis thereof and which follows a constant curve course continuously from said tooth root to said tooth crest, adjacent tooth flanks following said constant curve course from the crest of one tooth flank to the root of the corresponding tooth and from the root of the next adjacent tooth to the crest thereof.

4,614,485

UNLOADER FOR A TIRE CURING MACHINE

Katsuyoshi Sakaguchi, and Yukihiro Koga, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1985, Ser. No. 758,793

Claims priority, application Japan, Sep. 4, 1984, 59-183775

Int. Cl.[4] B29H *5/02*

U.S. Cl. 425—38 **1 Claim**

1. An unloader for handling a cured tire in a tire curing machine of the type that a guide rod is disposed between the tire curing machine and a post-cure inflator and is connected to a main body of said tire curing machine, an arm is mounted on said guide rod so as to be movable vertically along said guide rod and swingable about the axis of said guide rod between a center post of a metal mold of said tire curing machine and a bayonet portion of a post-cure inflator ring of said post-cure inflator, a bladder removably arranged inside the cured tire, and a tire gripping device is mounted at the tip end portion of said arm; characterized in that the tire gripping device comprises:

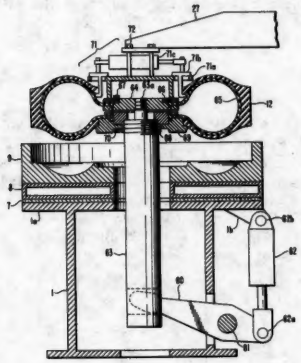
a chuck base means secured to said arm for depressing an upper bladder clamp ring upon lowering said arm to form a space between inner circumferential portions of the bladder and the cured tire,

chuck claws being mounted on said chuck base means so as to be expansible and contractible for insertion into said

space and for gripping a bead portion of the cured tire,

a hydraulic cylinder means, mounted on said chuck base means, for expanding and contracting the chuck claws, and

a lever means, connected to the center post of the metal mold, for mechanically raising said center post so that the cured tire is separated from the metal mold and also for mechanically lowering said center post while the arm is



simultaneously raised so that the bladder is removed from inside the cured tire,

whereby the bladder and the cured tire are separated from each other without damaging either one of them, and

further whereby said bladder and said cured tire are so separated solely by raising and lowering the arm and the center post without providing an additional driving mechanism.

4,614,486

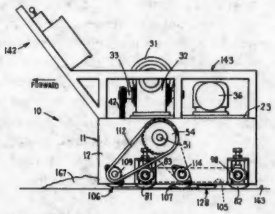
PORTABLE APPARATUS FOR COMPACTING AND LEVELING A POURED FLOOR

Bruno Bragagnini, 835 Farrel St., Kalamazoo, Mich. 49007

Filed Nov. 7, 1984, Ser. No. 669,287

Int. Cl.[4] E01C *19/28*

U.S. Cl. 425—62 **12 Claims**



1. A machine for compacting and leveling a poured floor covering, comprising:

frame means having a pair of side members;

a pair of parallel, ground engaging, cylindrical rollers;

first support means for rotatably supporting said pair of cylindrical rollers on said side members and supporting said frame means for movement in forward and reverse directions;

a screw member having a right-hand screw segment over a portion of the length thereof, and a left-hand screw segment over a remainder portion of the length thereof;

second support means for rotatably supporting said screw member for rotation on said side members and about an axis parallel to the axes of rotation of said cylindrical rollers, the theoretical cylinder defined by said screw segments being elevated above a plane defined by the lines of contact of said cylindrical rollers with said ground;

first drive means for rotatably driving said cylindrical rollers about their respective axes of rotation;

second drive means for rotatably driving said screw member about its axis of rotation so that said right-hand and left-hand screw segments engaging said poured material will effect a moving of said material to a region in front of and between said screw segments; and

means on said screw member for pushing the balance of material arriving at said region between said screw segments forwardly of said machine, said means on said screw member including, in said region between said screw segments, blade means connected to and extending between mutually adjacent ends of said right-hand and said left-hand screw segments, the leveled material passing under said screw member, as said machine is moved forwardly, being compacted by successive passage beneath said cylindrical rollers.

4,614,487

EAR PLUG AS WELL AS A METHOD AND APPARATUS FOR THE PRODUCTION THEREOF

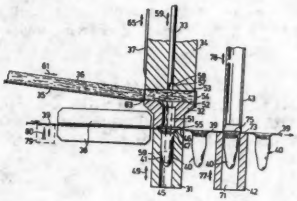
Kalman Csiki, Landskrona, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

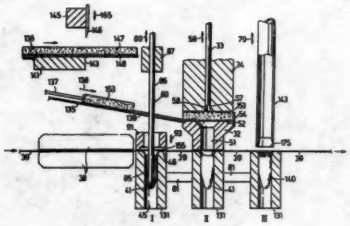
Division of Ser. No. 403,657, May 20, 1982, Pat. No. 4,498,469. This application Oct. 2, 1984, Ser. No. 656,898

Claims priority, application Sweden, Oct. 22, 1980, 8007422

Int. Cl.[4] A23G *1/20, 3/12;* **A23P** *1/00;* **B21C** *3/00*

U.S. Cl. 425—112 **5 Claims**





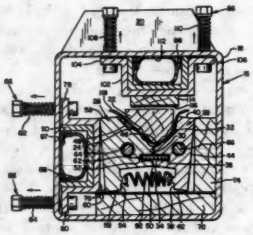
1. An apparatus for producing an ear plug having an elongate body of elastic material surrounded by a sheath of flexible plastics material intended for insertion in the auditory meatus of an ear, said apparatus comprising means for deep-drawing a thermoplastic film or foil into a sheath and means for filling the sheath with elastic material whereby an ear plug of the filled deep drawn thermoplastics film or foil and suitable for insertion in the auditory meatus of an ear is formed.

4,614,488

OVERLAY MOLDING PRESS

Helmut Sigerist, Fort Langley, Canada, assignor to Venturetech Enterprises, Inc., Vancouver, Canada

Filed Jul. 2, 1985, Ser. No. 751,013
Int. Cl.[4] B29B *11/12*
U.S. Cl. 425—233 **5 Claims**



1. A press for applying an overlay to an elongate component comprising:

a pair of elongate opposed jaw members, each jaw member having a shoulder extending along the length thereof and an elongate forming surface paralleling said shoulder with an edge of said surface located at said shoulder,

said jaw members being disposed with their said shoulders substantially parallel and meeting each other and their said forming surfaces cooperating to define the inwardly sloping sides and bottom of an elongate substantially uniformly cross-sectioned, open-top mold cavity extending between the jaw members, press means opposing the open-top of said mold cavity actuatable to force a component lodged within the cavity further within the cavity, and

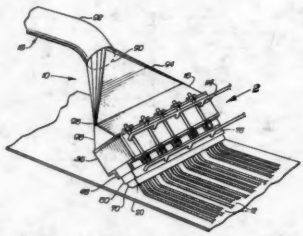
means mounting said jaw members for relative rocking movement about an axis extending along the region where said shoulders meet whereby the sides of the cavity defined by said forming surfaces swing toward each other.

4,614,489

SIMULTANEOUS EXTRUSION OF MULTIPLE STREAMS OF A FIBROUS FOOD PRODUCT

Davor Juravic, San Pedro, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.

Filed Jan. 7, 1985, Ser. No. 689,284
Int. Cl.[4] A22C *7/00*
U.S. Cl. 425—376 R **13 Claims**



1. Apparatus for the simultaneous extrusion at an extrusion discharge station of at least two streams of a food product from a single mass of the food product, the food product having fibers therein with a greatest expected fiber length and an average fiber length, and the minimum desired product spacing between the streams at the extrusion discharge station being less than the greatest expected fiber length, the apparatus comprising:

container means for containing the mass of the food product; and

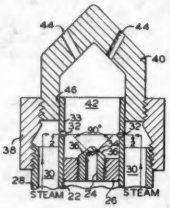
at least two extrusion channels communicating with said container means at a channel entry station, each of said channels having a spacing from all other channels at the channel entry station of greater than the average fiber length, said channels being convergently arranged so that the distance between the channels at the extrusion discharge station is the desired product spacing.

4,614,490

METHOD AND APPARATUS FOR ATOMIZING FUEL

Edward F. Kiczek, Long Valley, N.J.; Mervyn J. Beckner, Sarnia, Canada, and Emiliano Trimon, Tanki Leendert, Netherlands Antilles, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 1, 1985, Ser. No. 718,804
Int. Cl.[4] F23J *7/00*; B05B *7/06*
U.S. Cl. 431—4 **11 Claims**



1. An improved liquid fuel atomizing gun comprising a liquid fuel tube having a first end and a second end; a steam tube concentrically surrounding said fuel tube to define an annular steam passageway about said fuel tube, and a hollow gun tip having atomized fuel ejection orifices cooperative with the first end of said fuel tube to define therewith a fuel and steam mixing chamber within the first end of said fuel tube; and fuel tube including fuel spray nozzle means having at least one orifice to spray liquid fuel outwardly from said nozzle into and substantially along the circumference of said mixing chamber in a first swirling direction and at least one steam orifice extending through said fuel tube first end to place said annular steam passageway in communication with said mixing chamber, said steam orifice being oriented to direct steam into and along the circumference of said mixing chamber in a swirling direction opposite to said first swirling direction of said liquid fuel, whereby the kinetic energy of the pressurized steam and fuel streams flowing in the steam passageway and the fuel tube is preserved until atomization occurs in said mixing chamber when said steam and liquid fuel meet in opposite swirl directions.

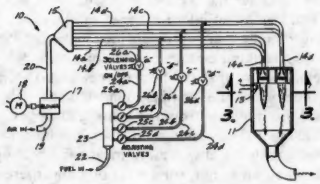
9. The method of atomizing a liquid fuel with steam prior to ejection from the tip of a fuel gun having an inner fuel tube and a steam tube surrounding said fuel tube to define an annular steam passageway about said fuel tube, comprising the steps of: spraying liquid fuel outwardly through one or more orifices into and substantially along the circumference of a mixing chamber defined by the gun tip and an end of said liquid tube to establish a swirling of said liquid fuel in a first direction in said mixing chamber, and introducing steam from said steam passageway into and substantially along the circumference of said mixing chamber in a swirling direction opposite to said first direction, whereby said steam and fuel meet in said mixing chamber in opposite swirl directions.

4,614,491

MULTIPLE BURNER CONTROL APPARATUS

David P. Welden, N. Indiana Ave., Iowa Falls, Iowa 50126

Filed Oct. 7, 1985, Ser. No. 785,217
Int. Cl.[4] F23Q *9/08*
U.S. Cl. 431—60 2 Claims



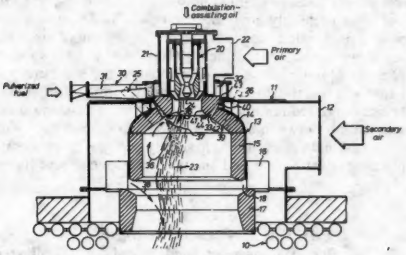
1. A multiple burner control apparatus comprising:
means for forming a burning chamber;
a first burner disposed in said burning chamber;
a second burner disposed in said burning chamber adjacent to said first burner;
a first conduit means connected at one end thereof to said first burner means;
a second conduit means connected at one end thereof to said second burner means;
means for forming an air manifold to interconnect the other ends of said first and second conduit means;
a blower means for blowing air;
a third conduit means for fluidly interconnecting said blower means to said air manifold means;
a first fuel line means fluidly connected at one end thereof to said first conduit means at a point upstream from said burning chamber;
a second fuel line means fluidly connected to said second conduit means at a point upstream from said burning chamber;
means for forming a fuel manifold to fluidly interconnect the other ends of said first and second fuel line means;
means for supplying fuel under pressure to said fuel manifold means;
first adjusting valve means disposed in said first fuel line means for adjusting the amount of fuel that will pass therethrough;
second adjusting valve means disposed in said second fuel line for adjusting the amount of fuel that will pass therethrough;
first shut-off valve means disposed in said first fuel line means for alternatively completely opening or completely closing said first fuel line means;
second shut-off valve means disposed in said second fuel line means for alternatively completely opening or completely closing said second fuel line means;
means disposed at least partially in said burning chamber for igniting a fuel air mixture passing out through said first burner; and
electrical time delay relay means for automatically causing said second shut-off valve means to open at a predetermined time after said igniting means ignites said first burner independently of the pressure in said first and second fuel line means, whereby said second burner will be ignited by the flame from said first burner after said predetermined time has elapsed.

4,614,492

BURNER FOR BURNING PULVERULENT FUEL

Sten Y. Olsson, Gothenburg, Sweden, assignor to Ingeniorsfirman Petrokraft AB, Gothenburg, Sweden

Filed Feb. 13, 1985, Ser. No. 701,119
Claims priority, application Sweden, Feb. 13, 1984, 8400738
Int. Cl.[4] F23D *1/00*; F23Q *9/00*
U.S. Cl. 431—284 4 Claims



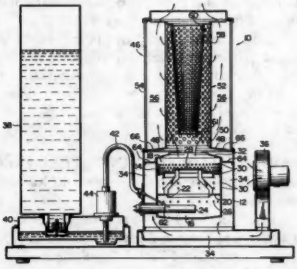
1. A burner for burning a pulverulent fuel, using a combustion-assisting flame produced by means of liquid or gaseous fuel, said burner having a divergent burner quarl (13) proximate the narrow end of which feed means (30) for injecting the pulverulent fuel, a pressure liquid or compressed air burner (20) for combusting the combustion-assisting gaseous or liquid fuel, and a primary air inlet (22) are arranged and proximate the other end of which an inlet (18) for secondary or main combustion air opens, the burner nozzle (24) of said pressure liquid or compressed air burner (20) being disposed at the narrow end of the divergent burner quarl (13), characterized in that the outlet (33) of the feed means (30) for the pulverulent fuel in the divergent burner quarl (13) opens in the divergent wall portion (14) thereof at a distance spaced from both the burner nozzle (24) and from the inlet (18) for secondary or main combustion air and consists of a number of spaced-apart discharge passages (33) arranged in a ring around the burner quarl (13) and directed obliquely inwardly towards the axis of the burner.

4,614,493

HEAT RADIATION-TYPE OIL BURNER

Kazuharu Nakamura, and Tooru Yoshino, both of Nagoya, Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Mar. 28, 1984, Ser. No. 594,175
Claims priority, application Japan, Mar. 29, 1983, 58-45386[U]
Int. Cl.[4] F23D *5/02*
U.S. Cl. 431—341 11 Claims



1. A pot-type oil burner of the heat radiation type comprising:

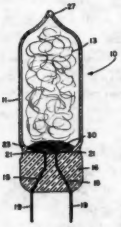
a housing;
a pot received in said housing;
a combustion cylinder construction arranged on said housing so as to be in communication with said pot, said combustion cylinder construction comprising a red-heated combustion cylinder means and a heat-permeable cylinder arranged to surround said cylinder means with a space being defined between said means and an inner surface of said heat-permeable cylinder;
an air supply passage defined between said housing add said pot so as to supply air therethrough to said pot; and
clouding prevention means for providing a flow of air along the inner surface of said heat-permeable cylinder so as to prevent clouding of said inner surface by moisture, exhaust gas or the like, said clouding prevention means comprising a communicating means for establishing communication between said space of said combustion cylinder construction and said air supply passage so as to supply a part of the air in said air supply passage to said space.

4,614,494

PRIMER INSULATING BASE

John W. Shaffer, Williamsport, and Ronald E. Sindlinger, Muncy, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 10, 1985, Ser. No. 807,421
Int. Cl.[4] F21K *5/00*
U.S. Cl. 431—362 **11 Claims**



1. A high-voltage photoflash lamp comprising:
an hermetically-sealed light-transmitting envelope including a combustion-supporting atmosphere therein;
a quantity of filamentary combustible material located within said envelope;
ignition means for igniting said combustible material, said ignition means including a pair of electrical conductors sealed within said envelope and projecting therefrom, each of said conductors including an end portion having access to the interior of said envelope;
a mass of primer material located within said envelope in electrical contact with said end portions of said electrical conductors, said end portions of said electrical conductors being buried in said primer material; and
a layer of hollow electrically insulating beads located between said primer material and said combustible material, the layer of hollow beads being contiguous to the surface of said primer material.

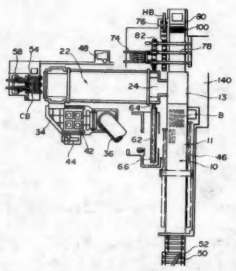
4,614,495

APPARATUS FOR SOAKING STEEL PIECES

Seigo Tabuchi, Narashino, Japan, assignor to Kabushiki Kaisha Itoh Seitetsusho, Tokyo, Japan

Filed Jan. 3, 1985, Ser. No. 688,589
Claims priority, application Japan, Sep. 17, 1984, 59-194255
Int. Cl.[4] F27B *3/04, 9/02*
U.S. Cl. 432—164 **3 Claims**

1. An apparatus for soaking steel pieces including cold steel pieces and hot steel pieces, the apparatus being of the type which includes: a soaking furnace for subjecting the steel pieces to a soaking treatment; a preheating chamber for preheating the cold steel pieces before the cold steel pieces are introduced into the soaking furnace, the preheating chamber being connected to the soaking furnace for receiving waste heat from the soaking furnace for the preheating treatment and having an outlet portion for discharging the cold steel pieces; and means for introducing the steel pieces into the soaking furnace and advancing the steel pieces through the soaking furnace, the improvement wherein the soaking furnace comprises:
(a) a heating chamber having a first ceiling, first sidewalls and one end having an inlet for the steel pieces;
(b) a soaking chamber integrally formed with the heating chamber, the soaking chamber communicating with the heating chamber so that the heat energy is fed from the soaking chamber to the heating chamber and so that the steel pieces are movable from the heating chamber to the soaking chamber, the soaking chamber having a second ceiling, second side walls, heating means for heating the steel pieces and an outlet, formed at one end thereof remote from the heating chamber, for discharging the steel pieces, the soaking chamber being aligned with the heating chamber along a line of travel of the steel pieces from the inlet of the heating chamber to the outlet of the soaking chamber;



(c) means for connecting the one end of the heating chamber to the outlet portion of the preheating chamber for feeding waste heat from the heating chamber to the preheating chamber, and wherein;
the soaking chamber defines a unitary space, the heating means is disposed at an upper portion of one of the second side walls of the soaking chamber; and the second ceiling of the soaking chamber is higher than the first ceiling of the heating chamber, whereby a radiative heat zone is produced at a portion near the second ceiling within the soaking chamber when the heating means is operated, thus soaking mainly by radiative heat transfer the steel pieces, which have been heated in the heating chamber mainly by convective heat transfer due to the heat energy fed from the soaking chamber, at a higher temperature than in the heating chamber.

4,614,496

COWPER HAVING NO COMBUSTION SHAFT

Chen Binglin, Jijian da lou 414, Gucheng Street, and Zhang Bopeng, Jijian da lou 405, Gucheng Street, both of Shijingshan, Beijing (Pekin), China

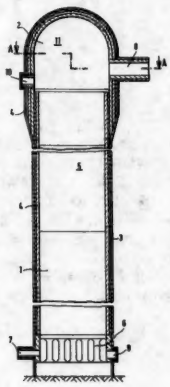
Filed Oct. 2, 1984, Ser. No. 657,026
Claims priority, application Luxembourg, Oct. 5, 1983, 85029
Int. Cl.[4] F24H *7/00;* F23C *5/32*
U.S. Cl. 432—214 **29 Claims**

1. A cowper having no combustion shaft therein comprising a vertical chequerwork shaft and including:
combustion chamber means disposed above the chequer-

work and adapted for the combustion of fuel and air at a preselected combustion rate;

a cupola having an outer cupola wall surrounding a cupola interior, said cupola interior defining said combustion chamber means, a portion of said cupola having a circular cross-section in the horizontal plane through said cupola wall, said cupola being topped by a cupola arch; and

at least one burner means being positioned along the wall of said cupola, said burner means having fuel and air flowing therethrough at respective preselected flow rates, said



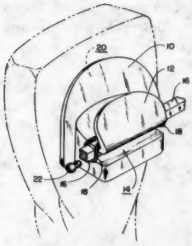
burner means leading to a burner duct adapted for mixing the fuel and air flowing therethrough prior to combustion in said cupola interior, said burner duct being located in said cupola wall and being inclined relative to said horizontal plane, said burner duct having a conically shaped outlet section which diverges towards said cupola interior, said duct outlet section being oriented upwardly at a selected angle toward said cupola arch whereby the respective flow rates of the fuel and air at the burner duct outlet section are above the preselected combustion rate of the fuel and air in said combustion chamber means.

4,614,497

ORTHODONTIC BRACKET FOR A DOUBLED-OVER TIE LIGATURE

Craven H. Kurz, 465 N. Roxbury Dr., #1011, Beverly Hills, Calif. 90210

Filed Jul. 16, 1984, Ser. No. 631,491
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—8 **9 Claims**



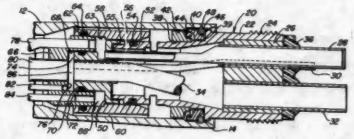
1. An orthodontic appliance comprising: a base adapted to be attached to a patient's tooth; an orthodontic bracket attached to said base having an incisal portion and a gingival portion foreshortened with respect to said incisal portion, and further having a transverse slot in the outer surface thereof extending thereacross transverse to and located between said incisal and gingival portions for receiving an arch wire; retrainer means mounted on the incisal portion of the bracket above said transverse slot; and an annular ligature having a first portion retained in said retainer means, and having a second portion looped around said arch wire at each end of said slot and doubled back and likewise retained by said retainer means.

4,614,498

SWIVEL FOR AN ILLUMINATED DENTAL HANDPIECE

Robert K. Vaccaro, Philadelphia, Pa., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 19, 1985, Ser. No. 702,713
Int. Cl.[4] A61C *1/08*
U.S. Cl. 433—126 **13 Claims**



1. A dental handpiece comprising:

a housing having a distal end and a proximal end;

first light conducting means within said housing to conduct light from substantially the proximal end to the distal end of said housing, said first light conducting means having a first terminus adjacent the proximal end of said housing;

first liquid conducting means within said housing to conduct liquid from substantially the proximal end to the distal end of said housing;

a connector having a distal end and a proximal end and being adapted for rotational attachment to the proximal end of said housing;

second light conducting means within said connector to conduct light from the proximal end to the distal end of said connector, said second light conducting means having a second terminus adjacent the distal end of said connector;

second liquid conducting means within said connector to conduct liquid from the proximal end to distal end of said connector; and

a manifold within said housing for sealingly engaging a portion of said connector and said first light conducting means and said first liquid conducting means, said manifold and the distal end of said connector, when said connector is attached to said housing, defining a sealed space through which liquid can flow from said second liquid conducting means to said first liquid conducting means and through which light can be transmitted from the second terminus of said second light conducting means to the first terminus of said first light conducting means.

4,614,499

SIMULATOR FOR USE AS A NEUROSURGICAL AID IN DETERMINING POTENTIAL PATHS FOR THE IMPLANTATION OF PROBES THROUGH THE HUMAN BODY

Pierre-Michel Arseneault, Charlesbourg; Michel Boulianne, Jonquière; Louis Cloutier, Sillery; Sanjib K. Ghosh; Paul Labissonniere, both of Ste-Foy; Pierre Marcotte, Quebec, and Dinh N. Nguyen, Sillery, all of Canada, assignors to Universite Laval, Quebec, Canada

Filed Apr. 29, 1985, Ser. No. 728,277
Int. Cl.[4] G09B *23/28*
U.S. Cl. 434—262 **11 Claims**

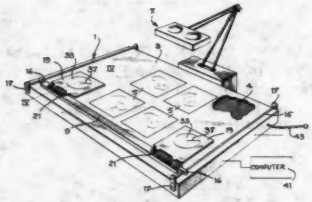
1. A simulator for use with stereoradiographs, as a neurosurgical aid, in locating potential paths for the implantation of

probes in selected locations of a human body, said simulator comprising:

a support having a flat top surface for mounting thereon radiographs for stereoscopic viewing;

means incorporated into said support for allowing determination of the coordinates of a point on said top surface;

an elongated ruler lying over said flat top surface;



means at the ends of said support and at the ends of said ruler cooperating together for moving said ruler in translation over said top surface and between said support ends;

a pair of transparent flat plotting plates, each plate having a circular hole therethrough and comprising a transparent circular disc rotatable within said hole and means defining a radial line extending from the center of said disc; and

means mounting said plates and discs for sliding displacement along said ruler above said table top surface.

4,614,500

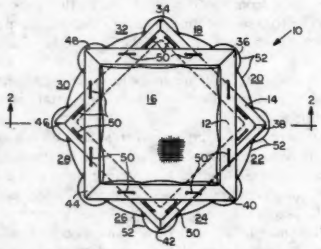
FLOTATION PLATFORM

David D. Miller, Brick, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 529,919, Sep. 7, 1983, abandoned. This application Jul. 31, 1985, Ser. No. 762,013

Int. Cl.[4] B63H *11/107*

U.S. Cl. 441—40 **7 Claims**



1. Bouyant life raft structure comprising four elongate substantially equal length straight tubular gas-distensible side section members interconnecting at end portions thereof in gas communication to define four apexes each of substantially ninety degrees included angle and cooperatingly defining a first closed planar square member, a second planar square member substantially identical with said first planar square member, regular equilateral flexible web means having a perimeter of sixteen sides including eight reentrant angles alternating circumferentially with eight outward angles for defining a floor of said life raft structure, said first and said second planar square members being stacked plane-on-plane and intersecuring with said web means at said perimeter thereof to sandwich the latter therebetween with diagonals of said first and said second square members defining therebetween an acute angle of about forty-five degrees, the apexes of each said first and said second square member aligning radially with and protruding outwardly of the respective centers of the side section members of the other of said first and said second square member, said side section members of said first and said second square members being thereby disposed angularly in plan view and vertically one above the other to define reentrant exterior angles of substantially 135° included angle to define eight step-like and crotch-lide evacuee boarding stations circumferentially spaced around said life raft structure between adjacent protruding apexes of said first and said second square members, each boarding station being useable irrespective of which one of said first square member and said second square member is upward upon a body of water.

4,614,501

METHOD OF MANUFACTURING A COLOR CATHODE-RAY TUBE COMPRISING A MAGNETIC QUADRUPOLE POST-FOCUSING MASK AND DEVICE FOR CARRYING OUT THE METHOD

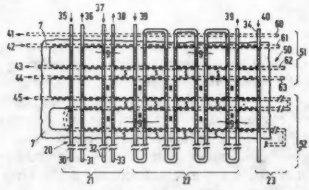
Jacob Koorneef; Robert H. J. Fastenau, and Paulus J. J. M. van der Heijden, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1984, Ser. No. 645,877

Claims priority, application Netherlands, Sep. 5, 1983, 8303076

Int. Cl.[4] H01J *9/236*

U.S. Cl. 445—47 **13 Claims**



1. A method of manufacturing a colour cathode-ray tube comprising a magnetic quadrupole post-focusing mask formed by a plate of a magnetizable material in which apertures are provided so as to be arranged according to rows, sections of said plate being successively magnetized by positioning parallel conductors per section on at least one side of the plate in such manner that each time two conductors through which an electric current flows in opposite directions are present between two successive rows of apertures, a magnetic quadrupole being formed along the circumference of each of the apertures, characterized in that a first section is magnetized and then at least one subsequent section is magnetized, said subsequent section comprising an edge area extending parallel to the parallel conductors and coinciding with a part of a preceding section already magnetized according to the desired strength, and a magnetic induction is generated in the edge area according to a pattern corresponding to the already existing pattern of magnetization in said preceding section, the strength of said magnetic induction decreasing towards the outermost of the parallel conductors.

9. A device for producing a magnetic quadrupole post-focusing mask from a plate of a magnetizable material in which apertures are provided in rows, comprising:

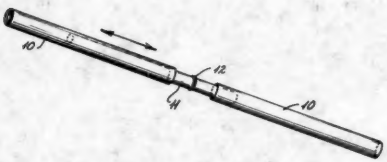
an insulating support;

at least a first and second set of mutually parallel conductors, said sets being juxtaposed on said insulating support in parallel non-overlapping relationship, conductors of said first set being interconnected in a zig-zag manner, the conductors of said second set being individual conductors each having its own electrical terminals.

4,614,502
TELESCOPING STRUT MEMBERS AND TENDONS FOR CONSTRUCTING TENSILE INTEGRITY STRUCTURES

William A. Nelson, 52 High St., Middlebury, Vt. 05753

Filed Mar. 11, 1985, Ser. No. 710,629
Int. Cl.[4] A63H *33/00*
U.S. Cl. 446—119 3 Claims



1. A construction toy from which tensile integrity structures can be assembled, said toy comprising,

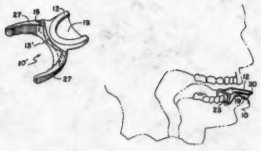
a. a pluraiity of telescoping strut members each being composed of two or more generally rigid hollow tubular sections and fitted, at or near each of its ends, with means for attaching one or more flexible tensile members;

b. a plurality of generally flexible tensile members, each greater in length than the collapsed length of the telescoping strut members, and capable of being attached at an end point to a first telescoping strut member and, at points along its length, to a second and additional telescoping strut members, thereby joining the telescoping strut members in a discontinuous relationship.

4,614,503
INDIVIDUALLY FITTED GAME CALL

Jerald T. Skoda, 603 Franklin St., Decorah, Iowa 52101

Filed Mar. 13, 1985, Ser. No. 711,230
Int. Cl.[4] A63H *5/00*
U.S. Cl. 446—213 30 Claims

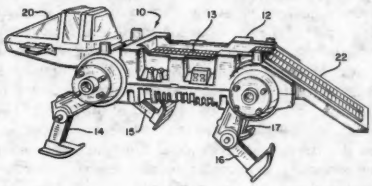


1. A wild game call, comprising: a frame, means including a bite-wing portion on said frame for adapting it to be supported and held by the user's mouth between the user's front teeth while it extends outwardly of the user's lips, and means on said frame for adapting it to retain an elastic diaphragm in a position adjacent to and exposed to contact by one of the user's lips while the frame is so supported and held, said diaphragm being made to vibrate as air is expelled from the user's mouth between said one lip and said frame and over the diaphragm, thus producing a sound imitative of wild game.

4,614,504
WALKING TOY VEHICLE WITH RAMP

Toshio Yamasaki, Long Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 15, 1985, Ser. No. 755,116
Int. Cl.[4] A63H *3/22*
U.S. Cl. 446—356 6 Claims



1. In a toy vehicle, the combination comprising:

a generally hollow body;

a first pair of leg means pivotally coupled to the front of said body;

a second pair of leg means pivotally coupled to the rear of said body;

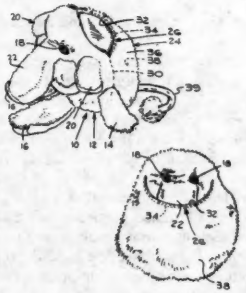
motor operated means within said body coacting with said leg means to provide a walking motion; and

means on the rear of said vehicle for supporting said vehicle on a surface with said body in a generally upright position, said supporting means including a ramp member pivotally coupled to said body rearwardly of said rear leg means, said ramp member and said rear leg means being positioned and dimensioned to enable alternate contact of each of said rear leg menas with the supporting surface to provide a rocking movement of said vehicle with the motor means operative, while enabling movement of said front leg means to simulate a boxing motion.

4,614,505
TRANSFORMABLE TOY FIGURE

Thomas P. Schneider, Westlake, and Susan E. Trentel, Lakewood, both of Ohio, assignors to Those Characters from Cleveland, Cleveland, Ohio

Filed Jun. 27, 1985, Ser. No. 754,142
Int. Cl.[4] A63H *3/02*
U.S. Cl. 446—372 26 Claims



1. A toy figure which is transformable between first and second configurations, comprising a body portion having fanciful material integral therewith, and means enabling transformation of the toy figure between its first and second configurations comprising a fabric segment integral with said body portion and forming a pocket thereon; said pocket having an opening; said pocket being resiliently deformable and having a

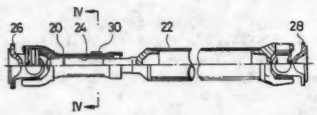
memory which contracts the pocket toward a predetermined set when forces causing deformation of the pocket are removed; said pocket being resiliently deformable to expand the size of the pocket as the toy figure is transformed from one configuration to another; the fabric segment having first and second surfaces; the pocket being inverted as said toy figure is transformed between its first and second configurations such that (i) one of the first and second surfaces of the fabric segment is maintained in facing relation to and at least partially against a part of the body portion and the other surface defines part of the outer periphery of the figure when the figure is in its first configuration and (ii) the other of the first and second surfaces of the fabric segment is maintained in facing relation to and at least partially against a part of the body portion and the one surface defines part of the outer periphery of the figure when the figure is in its second configuration; said pocket being resiliently deformable to progressively uncover said fanciful material in a first mode of transformation of the toy figure between said first and second configurations; said pocket being resiliently deformable to progressively cover said fanciful material in a second mode of transformation of the toy figure between said first and second configurations; the memory of the pocket enabling the pocket to hold the toy figure in a selected configuration during either of said first or second modes of transformation of the toy figure.

4,614,506

SPLINED PROPELLOR SHAFT IN WHICH THE SPLINED SECTIONS ASSUME A CONSISTENT RADIAL RELATION WHEN ROTATED

Tetsushin Sakata, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 8, 1985, Ser. No. 699,922
Claims priority, application Japan, Feb. 10, 1984, 59-16863[U]
Int. Cl.[4] F16C *3/03*; F16D *3/06*; F16F *15/22*
U.S. Cl. 464—162 **7 Claims**



1. A propellor shaft for transmitting power between a source of rotational motion and a driven member, said shaft comprising:

a first shaft having an internally splined section at one end thereof;

a second shaft having an externally splined section at one end thereof; said externally splined section of said second shaft being slidingly received within said internally splined section of said first shaft with a radial clearance which permits radial movement of said externally splined section and said internally splined section relative to each other, and

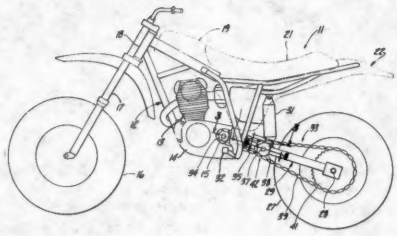
means on at least one of said first and second shafts for causing a predetermined portion of the circumference of one splined section to move radially into tight engagement with the other splined section as said propellor shaft is rotated, wherein said means for causing radial movement of said predetermined portion of said one splined section comprises weight means secured with said one splined section for producing an asymetrical circumferential weight distribution around said one splined section and generating a centrifugal force in a predetermined radial direction of said splined section whenever said propellor shaft is rotated, whereby said splined sections consistently assume that same radial relation with respect to each other whenever said propellor shaft is rotated.

4,614,507

TRANSMISSION CHAIN ADJUSTER FOR MOTORCYCLES

Katsuya Ishino, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 14, 1985, Ser. No. 712,018
Claims priority, application Japan, Mar. 15, 1984, 59-50506
Int. Cl.[4] F16H *7/08*; B62K *25/02*
U.S. Cl. 474—101 **10 Claims**



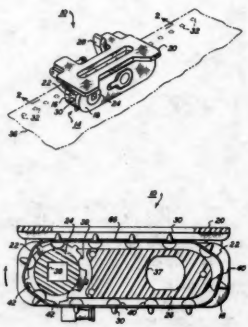
1. A chain drive for a wheeled vehicle comprising frame means, power means carried by said frame means for driving a drive shaft rotatably about a first axis extending transversely to the longitudinal axis of said frame means, trailing arm means supported for pivotal movement about a pivot axis by said frame means, an idler shaft rotatably journaled on said trailing arm means about a second axis parallel to said first axis and said pivot axis and spaced therefrom, first flexible transmitter means driving said idler shaft from said drive shaft, a wheel journaled by said trailing arm means for rotation about a third axis spaced from said first, said second and said pivot axes, second flexible transmitter means for driving said wheel from said idler shaft, and means for simultaneously adjusting the distance between said first axis and said second axis and the distance between said second axis and sais third axis for adjusting the tension of each of said first and said second flexible transmitter means.

4,614,508

DRIVE MECHANISM ESPECIALLY FOR WEB FEED TRACTORS

Leo Kerivan, Somerset, Mass., assignor to Precision Handling Devices Inc., Fall River, Mass.

Filed Mar. 1, 1985, Ser. No. 707,254
Int. Cl.[4] F16H *7/02*; G03B *1/30*
U.S. Cl. 474—153 **28 Claims**



1. In a drive mechanism having a member with longitudinally spaced drive elements and a sprocket with receptacles spaced along the periphery thereof which receive and engage

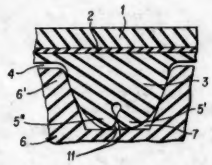
said drive elements as said sprocket rotates, the improvement comprising a plurality of projections on either the periphery of said sprocket between said receptacles or on said member between said drive elements, said projections being of such a height in a direction radially of said sprocket to bring said drive elements into registry with said receptacles as said drive members are received therein.

4,614,509

TOOTHED BELT

Giorgio Tangorra, Monza; Mario Cicognani, Milan, and Vincenzo Macchiarulo, Chieti, all of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 467,794, Feb. 18, 1983, abandoned.
This application Mar. 11, 1985, Ser. No. 709,367
Claims priority, application Italy, Feb. 26, 1982, 19872 A/82
Int. Cl.[4] F16G *1/28*
U.S. Cl. 474—205 **8 Claims**



1. A toothed belt for coupling with a pulley having a plurality of first teeth with adjacent first teeth being separated by first grooves, said belt comprising:

an annular body of elstomeric material, said annular body having a first surface portion and a second surface portion;

a tensile stress-resistant structure embedded in said annular body, said structure comprising a plurality of flexible and inextensible cords with axes arranged along the greatest dimension of the belt, the axes of said cords being parallel to and coplanar with one another;

a toothing on one of said surface portions of said annular body, said toothing comprising a plurality of second teeth formed from an elastomeric material, said second teeth having top and bottom portions, said second teeth being separated from one another at their bottom portions by second grooves; and

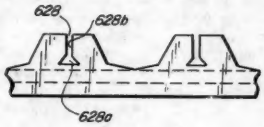
each said second tooth including means to give a localized elastic deformation to the top portion of said second teeth, said means comprising a contour determined by a biquadratic curve corresponding to the top portion of each second tooth of said plurality of second teeth, said contour including a slot between two ribs in each top portion alone of each second tooth, each second tooth having along a portion of its length corresponding to the depth of its slot a width greater that a width of a corresponding portion of a said first groove separating adjacent said first teeth of said toothed pulley, whereby during said coupling a said top portion of each second tooth is compressed at its slot by pressure applied thereto by walls of a corresponding portion of said first groove and whereby deformation by flexure of said two rivs and complete insertion of said second teeth of said annular body into said first grooves of said toothed pulley bring said two ribs toward each other.

4,614,510

POLYURETHANE TOOTHED BELT STRUCTURE

Yoji Nishikori, Komaki, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Mar. 8, 1985, Ser. No. 709,541
Int. Cl.[4] F16G *1/28*
U.S. Cl. 474—205 **19 Claims**



1. A toothed power transmission belt for use in a drive system having a pulley, said belt comprising:

a looped body provided with longitudinally extending tensile cord means and defining an inner portion; and

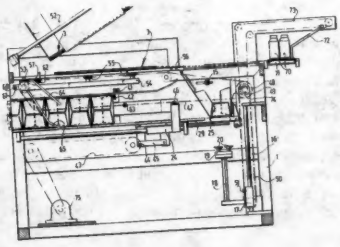
a longitudinally extending series of teeth projecting inwardly from said inner portion of the body with a preselected pitch, each tooth being provided with a transverse slot opening inwardly through the center of the tip of the tooth, said slot being keyhole-shaped in longitudinal cross section, said teeth being formed of a resilient material permitting the teeth to be constricted longitudinally thereof with the pulley to substantially close said slot.

4,614,511

APPARATUS FOR FOLDING A BOX OR TROUGH FROM A BLANK

Willem L. Verhoef, Dorpstraat 5, 4111 KR Zoelmond, Netherlands

Filed Mar. 6, 1985, Ser. No. 708,952
Claims priority, application Netherlands, Mar. 16, 1984, 8400856
Int. Cl.[4] B31B *3/02*
U.S. Cl. 493—125 **15 Claims**



1. Apparatus for folding a box or trough from a preformed blank having folding seams, which comprises the combination of means for holding a blank in a predetermined position; a mold assembly spaced from said predetermined position and including a set of folding members and a support; first conveyor means for reciprocation between a retracted position adjacent said support and an extended postion adjacent said predetermined position and for picking up a blank at said predetermined position and conveying it past said set of folding members and onto said support so that the blank is placed in the mold in at least partially folded condition; second conveyor means for reciprocation between said support and a laterally displaced position with respect thereto and for conveying the folded blank to the laterally displaced position; and

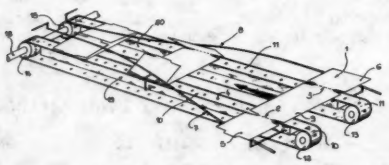
drive means for synchronously reciprocating said first and second conveyor means, said drive means comprising a first endless chain having generally parallel flights, a further endless chain having at least one flight generally parallel to a flight of the first endlesss chain and being longer than either flight of the first endless chain, a motor driving said first endless chain unidirectionally, link means pivotally joining said first endless chain to said one flight of the further endless chain so that the one flight of the further endless chain is travelled in one direction when the link means is moving along one flight of the first endless chain and in the opposite direction when the link means is moving along the other flight of the first endless chain, and transmission means connected with said further endless chain for reciprocating one of said conveyor means at a selected drive ratio relative to reciprocation of the other conveyor means.

4,614,512

SHEET FOLDING MACHINE

Bernard Capdeboscq, St Just Chaleyssin, France, assignor to S. A. Martin, Villeurbanne, France

Continuation of Ser. No. 453,564, Dec. 27, 1982, abandoned. This application Jul. 8, 1985, Ser. No. 752,015
Claims priority, application France, Feb. 4, 1982, 82 01782
Int. Cl.[4] B31B *1/26, 1/58*
U.S. Cl. 493—441 **5 Claims**



1. Apparatus for folding sheets (1) having flaps (5) each having fold lines (2), comprising

(a) a conveyor (10, 11) for sheets to be folded, provided with means (4, 14, 15) enabling said sheets to be advanced and means (19, 20) for retaining central portions (9) of said sheets flat on said conveyor for advancement in precise correspondence therewith; and

(b) lateral push folding means at least a portion of which is constituted by at least one endless spiral belt (22) directly carrying push studs located along said at least one belt in correspondence with successive sheets on said conveyor, and having support faces (26) in alignment with said fold lines;

(c) said at least one endless belt (22) being disposed at an angle to said conveyor such that said push studs progressively push down said flaps of said sheets to be folded, and having means (23, 24, 115) enabling it to advance at the same predetermined speed as said sheets to be folded, whereby misfolding of said sheets is prevented.

4,614,513

METHOD AND APPARATUS FOR TREATMENT TO REMOVE IMMUNOREACTIVE SUBSTANCES FROM BLOOD

William I. Bensinger, Seattle, Wash., assignor to Fred Hutchinson Cancer Research Center, Seattle, Wash.

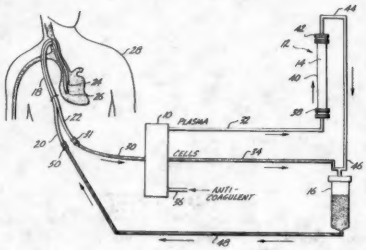
Filed Aug. 13, 1984, Ser. No. 639,727
Int. Cl.[4] A61M *1/03*
U.S. Cl. 604—6 **8 Claims**

1. A method for treating a patient by removing immunoreactive substances from the patient's blood, comprising:

removing blood from the patient;

separating the removed blood into a plasma component and a cellular component;

passing the plasma component through an immunoadsorbent material comprising a microbial ligand covalently bonded to an inert support to thereby produce a treated plasma component, the immunoadsorbent material comprising from one to three milligrams of the microbial ligand for each gram of the inert support, the microbial ligand comprising at least components of Staphylococcus Protein A; and



returning the cellular component and the treated plasma component to the patient;

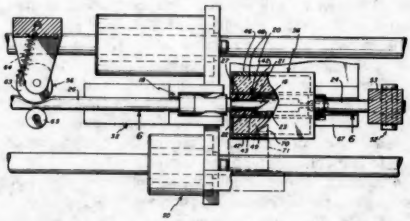
the removing, separating, passing and returning steps being performed substantially continuously and simultaneously with one another.

4,614,514

MICROWAVE STERILIZER

Kenneth L. Carr, Harvard; James F. Regan, Waltham; Gerald G. Bousquet, Chelmsford, all of Mass., and Robert J. Bielawa, Hudson, N.H., assignors to M/A Com, Inc., Burlington, Mass.

Filed Feb. 16, 1983, Ser. No. 466,894
Int. Cl.[4] A61F *7/12*
U.S. Cl. 604—113 **15 Claims**

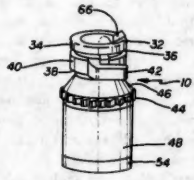


1. In a system for infusing a liquid into a living body by means of a coupling that intercouples a conduit from a source of said liquid to a conduit implanted in said body, said coupling comprising, a hollow male member connected to one of said conduits and a hollow female member connected to the other of said conduits, said male and female members adapted to engage and said male member having a spike end entering said female member, said female member having an inner diameter along a section thereof greater than the diameter of the spike end so as to provide an annular space about the spike end to accommodate the liquid providing a reservoir change of liquid about the spike end capable of being heated for sterilization thereof, in combination with microwave heating means including a guided wave member encasing said coupling for providing heating of the charge of liquid, the combination of the heating and a clamping of the coupling to provide an isolated charge having a constant volume of liquid providing a pressure increase within the coupling that allows the liquid temperature to rise above the boiling point of the liquid.

4,614,515
DRUG DELIVERY SYSTEM

Edward S. Tripp, Grayslake, and Mark E. Larkin, Lindenhurst, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 590,601, Mar. 19, 1984, abandoned. This application Nov. 21, 1985, Ser. No. 800,369
Int. Cl.[4] A61B *19/00*
U.S. Cl. 604—403 **48 Claims**



1. A storage and delivery system for delivering a flowable substance into a container provided with stopper removal means, comprising:

a vial having an opening, a wall portion and a bottom constructed and arranged to contain the flowable substance;

a removable, pierceable stopper in sealing engagement with said opening in said vial, said stopper including means for engagement with such a stopper removal means for removal of said stopper from said vial by said removal means;

a removable, pierceable diaphragm positioned over said stopper whereby the flowable substance may be extracted from said vial through a cannula inserted into said vial through said diaphragm and said stopper;

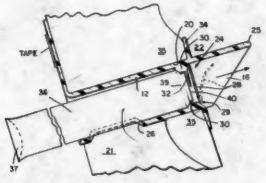
a skirt member in engagement with said wall portion of said vial; and

means for detachably attaching said removable, pierceable diaphragm to said skirt member to retain said diaphragm over said stopper and to permit detachment and removal of said diaphragm to expose said stopper so that the stopper may be engaged with a stopper removal means.

4,614,516
VOICE PROSTHESIS DEVICE

Eric D. Blom, Indianapolis, and Mark I. Singer, Carmel, both of Ind., assignors to Hansa Medical Products, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 373,635, Apr. 30, 1982, Pat. No. 4,435,853. This application Jan. 20, 1984, Ser. No. 572,249
The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.
Int. Cl.[4] A61F *2/20*
U.S. Cl. 623—9 **17 Claims**



1. A voice prosthesis device for placement in a fistula in a patient to channel air from a tracheostoma to the esophagus including in combination:

a housing having a channel extending therethrough, the housing further having a proximal end with first retaining means extending outwardly therefrom and a generally hood-like distal end,

means for fluidly coupling the tracheostoma to the housing's channel,

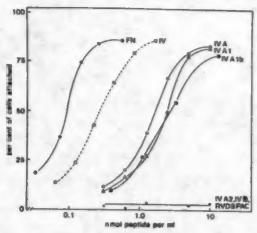
one-way valve means including a valve seat positioned within said housing, a valve membrane, means for mounting said valve membrane from said housing between said distal end and said valve seat to cooperate with said valve seat, the valve membrane having a region of reduced thickness defining a hinge, the region of the membrane on one side of the hinge being secured to the housing and the region of the membrane on the other side of the hinge being readily movable with respect to the secured region,

second means extending outwardly from said housing for retaining the device in the fistula, said second retaining means adapted to lie against the esophagus tissue when the device has been positioned in the fistula to retain and hold the device in proper position, such that upon blocking of air flow from the tracheostoma opening, said valve membrane is moved by air passing through the fluid coupling means from a closed position against said valve seat to an open position wherein the air passing through the fluid coupling means enters the esophagus to produce alaryngeal speech by the patient.

4,614,517
TETRAPEPTIDE

Erkki Ruoslahti, Olivenhain, and Michael Pierschbacher, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Division of Ser. No. 554,821, Nov. 22, 1983, Pat. No. 4,578,079, which is a continuation-in-part of Ser. No. 405,239, Aug. 4, 1982, Pat. No. 4,517,686, Ser. No. 433,457, Oct. 8, 1982, abandoned, and Ser. No. 518,036, Jul. 28, 1983, Pat. No. 4,589,881. This application Jun. 17, 1985, Ser. No. 745,086
Int. Cl.[4] A61F *2/00*; A61K *37/00*; C07K *1/00, 1/04*
U.S. Cl. 623—11 **13 Claims**



1. A composition of matter which promotes the attachment of cells to a substrate when immobilized on the substrate and consisting essentially of the peptide X-Arg-Gly-Asp-Ser-Y wherein X is H or at least one amino acid and Y is OH or at least one amino acid, said peptide being characterized in that it has substantially the same cell-attachment-promoting activity as fibronectin.

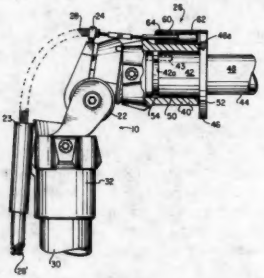
2. A composition of matter which inhibits the attachment of cells to a substrate when in solubilized form consisting essentially of the peptide X-Arg-Gly-Asp-Ser-Y wherein X is H or at least one amino acid and Y is OH or at least one amino acid, said peptide being characterized in that it has substantially the same cell-attachment-promoting activity as fibronectin.

4,614,518

ARTIFICIAL LIMB WITH AUTOMATIC RELEASE FOR FREE ROTATION

Hans R. Lehneis, Roslyn, and Charles Reibel, New York, both of N.Y., assignors to New York University, New York, N.Y.

Filed Mar. 8, 1983, Ser. No. 473,335
Int. Cl.[4] A61F 2/62
U.S. Cl. 623—39 16 Claims



1. In an artificial limb including first and second limb members connected for relative pivotal movement about a joint member, a rotator assembly for achieving rotation of said first limb member about an axis extending along its length, said rotator assembly being automatically enabled and disabled for rotation by the relative pivotal movement of said limb members, said rotator assembly comprising:

first and second rotator members on said first limb member mounted to be relatively rotatable about said axis, said rotator members being generally cylindrical and coaxially mounted extending within said second rotator member, one of said rotator members having a radially extending flange of substantially larger diameter than said rotator members, with an axially directed opening therein;

locking means, movable between a locking position and a released position, for providing a rigid connection between said rotator members when in said locking position, thereby preventing relative rotation thereof, said locking means being disengaged from at least one of said rotator members when in said released position, thereby permitting relative rotation thereof said locking means comprising a plunger mounted on the other of aid rotator members for movement towards and away from said opening, said plunger extending into said opening in said locking position and being external of said opening in said released position;

coupling means extending across said joint for providing a mechanical connection between said locking means and a fixed point on said second limb member, and

means for transmitting to said coupling means relative pivotal movement of said limb members, to impart to said locking means movement thereof between said locking and released positions.

4,614,519

SOIL RELEASE AGENT FOR TEXTILES

Ronald M. Ruppert, Moonachie, and Lenore E. Savio, West Milford, both of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Nov. 8, 1984, Ser. No. 669,567
Int. Cl.[4] B08B *3/04*
U.S. Cl. 8—137 **9 Claims**

1. A product comprising a textile fiber having coated thereon an effective soil releasing amount of a N-vinyl caprolactam soil releasing agent selected from the group of N-vinyl caprolactam homopolymers, copolymers and terpolymers, each copolymer and terpolymer being predominantly N-vinyl caprolactam with a minor amount of at least one monomer selected from the group consisting of (1) N-vinyl-pyrrolidone, (2) dialkylaminoalkyl acrylamide, (3) dialkylaminoalkyl methacrylamide, (4) dialkylaminoalkyl acrylate, (5) dialkylaminoalkyl methacrylate, (6) dialkyl dialkenyl ammonium halide, (7) stearyl acrylate and (8) stearyl methacrylate; and a blend of one or more of said N-vinyl caprolactam polymers with a conventional, supplementary anti-soiling agent.

7. A textile soil release composition comprising an aqueous solution containing an effective soil releasing amount of a soil releasing agent of N-vinyl caprolactam resin selected from the group of N-vinyl caprolactam homopolymers, copolymers and terpolymers, each copolymer and terpolymer each copolymer and terpolymer being predominantly N-vinyl caprolactam with a minor amount of at least one monomer selected from the group consisting of (1) N-vinyl pyrrolidone, (2) dialkylaminoalkyl acrylamide, (3) dialkylaminoalkyl methacrylamide, (4) dialkylaminoalkyl acrylate (5) dialkylaminoalkyl methacrylate, (6) dialkyl dialkenyl ammonium halide, (7) stearyl acrylate and (8) stearyl methacrylate; and a blend of one or more of said N-vinyl caprolactam polymers with a conventional, supplementary anti-soiling agent.

4,614,520

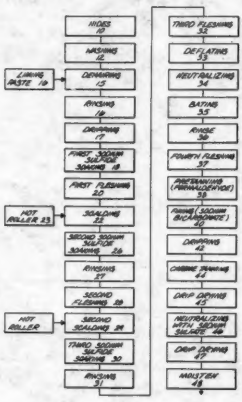
LEATHER PROCESSING

Alfredo Ibello, deceased, late of Naples, Italy; by Silvio Ibello, heir, Via E. Pomeo 151, 80126 Naples, Italy; by Emma Ibello, heir, 2144 W. Sheridan Rd., San Bernardino, Calif. 92407, and by Clelia Ibello, heir, 16761 Viewpoint La., #347, Huntington Beach, Calif. 92647

Continuation-in-part of Ser. No. 635,469, Jul. 27, 1984, abandoned, which is a continuation of Ser. No. 543,369, Oct. 19, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,572
Int. Cl.[4] D06P *3/32*
U.S. Cl. 8—436 **29 Claims**

1. A method for processing a leather hide comprising a flesh side and an epidermis side, the method comprising:

(1) soaking the leather in cold water for removing impurities and preservatives;
(2) applying a paste comprising quicklime, calcium hydrosulfide, and sodium sulfide to the flesh side of the hide essentially without directly contacting the epidermis side of the hide;
(3) removing wool and the paste from the hide to dehair the hide;
(4) soaking the hide in a first solution of sodium sulfide;
(5) fleshing the hide on the flesh side;
(6) scalding the epidermis side of the hide;
(7) soaking the hide in a second solution of sodium sulfide;
(8) fleshing both sides of the hide to remove the flesh from the hide;
(9) neutralizing the hide by rinsing the hide in water until alkalinity has been substantially eliminated;
(10) bating the hide with a bating agent;
(11) pretanning the hide in a pretanning bath containing formaldehyde;
(12) adding sodium bicarbonate to the formaldehyde containing pretanning bath to fix the hide;
(13) dripping the hide essentially without folding;
(14) tanning the hide in a tanning bath containing a basic chrome solution;
(15) drip drying the hide essentially without folding;
(16) neutralizing the hide by soaking the hide in a deacidifying bath containing sodium sulfate;
(17) drip drying the hide essentially without folding;



(18) fulling the hide until uniformly damp;
(19) shaving the hide on the epidermis side;
(20) deacidifying the hide by soaking the hide in a neutralizing bath containing ammonium sulfate; and
(21) degreasing the hide.

4,614,521

TRANSFER RECORDING METHOD USING REACTIVE SUBLIMABLE DYES

Toshio Niwa, Yokohama; Yukichi Murata, Sagamihara, and Shuichi Maeda, Saitama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed May 10, 1985, Ser. No. 733,222
Claims priority, application Japan, Jun. 6, 1984, 59-116198; Jun. 7, 1984, 59-117389; Jun. 7, 1984, 59-117390
Int. Cl.[4] D06P *5/00*; G01D *15/10*; G03C *5/54*
U.S. Cl. 8—471 **18 Claims**

1. In a transfer recording method which comprises heating a transfer sheet having a color material layer containing a sublimable dye on a base according to the image information received, thereby subliming said sublimable dye and transfer recording it on an image receiving layer of a recording sheet, a transfer recording method which is characterized in that the color material layer of the transfer sheet contains a sublimable dye having a vinylsulfonyl group and the image receiving layer of the recording sheet contains an active hydrogen compound.

4,614,522

FUEL COMPOSITIONS CONTAINING MODIFIED SUCCINIMIDES (VI)

Thomas F. Buckley, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 722,911, Apr. 12, 1985, abandoned. This application Dec. 31, 1985, Ser. No. 815,329
Int. Cl.[4] C10L *1/22*
U.S. Cl. 44—63 **26 Claims**

1. A fuel composition comprising a hydrocarbon boiling in the gasoline or diesel range and from 10 to 10,000 parts per million of a polyamino alkenyl or alkyl succinimide wherein one or more of the nitrogens of the polyamino moiety is substituted with

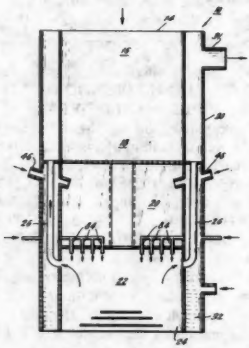
wherein R_4 is selected from the group consisting of hydrocarbyl of from 1 to 30 carbon atoms, $—R_5(OH)_t$ wherein R_5 is hydrocarbyl of from 2 to 20 carbon atoms and t is an integer from 1 to 6 with the proviso that there is no hydroxy substitution on the hydrocarbyl carbon atom attaching the $—R_5(OH)_t$ group to the oxy atom of the

moiety and with the further proviso than when t is greater than one, the hydroxy groups are not attached to the same carbon atom and the number of carbon atoms in the R_5 group is minimally equal to t+1, and $—(R_7O)_sH$ wherein R_7 is alkylene of from 2 to 5 carbon atoms and s is an integer from 2 to 100.

4,614,523
GRAVITY GASIFIER FOR REDUCING FREE TARS AND IMPROVING EFFICIENCY

Adelino H. F. Soares, Sao Paulo, Brazil, assignor to Voith S.A. Maquinas E Equipamentos, Brazil

Filed Jan. 8, 1985, Ser. No. 689,670
Claims priority, application Brazil, Jan. 9, 1984, MU 6400043
Int. Cl.[4] C10J *3/68*
U.S. Cl. 48—76 **16 Claims**



1. A downflow, gravity type gasifier comprising a continuous chamber having a vertical axis enabling the continuous downward flow of combustible materials, the chamber having a top end and a bottom end; from the top end to the bottom end; the gasifier chamber comprising: (A) a combustible material loading zone where the materials to be gasified are loaded; (B) a drying zone at which the materials are dried; (C) a pyrolyzing zone at which the materials are decomposed for subsequent reduction and oxidation; (D) a cracking zone for cracking tars which includes a lower part of the pyrolyzing zone; (E) a reduction zone at which gas is generated provided with a gas outlet from the chamber for the gas generated in the reduction and first oxidation zones; and (F) a first oxidation zone at which some gas is generated and the materials are oxidized;

dividing means for dividing the cracking zone into a plurality of sections of smaller cross-section than the entire chamber, each section having spaced apart top and bottom ends which are open for enabling materials to pass through all the sections from the pyrolyzing zone to the reduction zone; air inlet means for supplying air to all the sections defined by the dividing means in the cracking zone;

air delivery means for delivering air to a lower part of each section of the cracking zone, and dowstream therefrom into the reduction zone therebeneath; to create a second oxidation zone directly below and downstream from the cracking zone for performing additional oxidation, so as to deliver substantially tar-free gas from said gas outlet;

further comprising a jacket around the exterior of the oxidation zone for being filled with cooling water and the jacket being so exposed to the chamber at the oxidation zone that the water in the jacket is heated and steam is generated in the jacket; heating means in the drying zone for, in turn, radiating heat in the drying zone; a steam conduit connection from the cooling water jacket at the oxidation zone to the heat radiating means for delivering steam to the radiating means for heating the radiating means which then heats the drying zone.

4,614,524
WATER-FREE HYDROCARBON SEPARATION MEMBRANE AND PROCESS

Menahem A. Kraus, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 31, 1984, Ser. No. 687,714
Int. Cl.[4] B01D *59/10*
U.S. Cl. 55—16 **11 Claims**

1. An article comprising: a water-free membrane for separating aliphatically-unsaturated hydrocarbons from saturated hydrocarbons including a preformed membrane of polymeric materials for chemically binding positive metal ions which have been ion exchanged with metal ions with the metal ions being chemically bonded to the polymeric materials of the membrane and the membrane has been plasticized by polyhydric alcohols.

7. A process comprising separating a feedstream containing aliphaticaly-unsaturated hydrocarbons and saturated hydrocarbons by contacting the feedstream with a water-free membrane comprised of polymeric materials for chemically binding positive metal ions which have been ion exchanged with metal ions with the metal ions being chemically bonded to the polymeric materials of the membrane and the membrane has been plasticized by polyhydric alcohols; and permeating through the membrane a permeate which has a higher concentration of unsaturated hydrocarbons than in the feedstream.

11. A process comprising forming a water-free membrane for separating aliphatically-unsaturated hydrocarbons from saturated hydrocarbons by forming a membrane of polymeric materials for chemically binding positive metal ions; ion exchanging the polymeric materials of the membrane with metal ions which are chemically bonded to the polymeric materials of the membrane; and plasticizing the formed membrane with polyhydric alcohols.

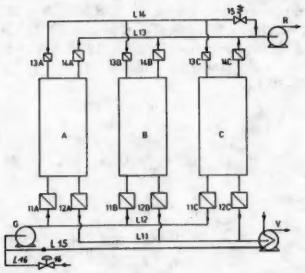
4,614,525
PRESSURE SWING PROCESS FOR THE ADSORPTIVE SEPARATION OF GASEOUS MIXTURES

Gerhard Reiss, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 1, 1985, Ser. No. 718,130
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1984, 3413895
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—25 **1 Claim**

1. In a continuously operating adsorption process for the purification and separation of gaseous mixtures by pressure swing adsorption, comprising alternately permeating at least two adsorbent beds with the gaseous mixture to be separated at at least 1 bar (abs), removing the non-absorbed component at the adsorber outlet, desorbing the beds countercurrent to adsorption by means of a vacuum pump, and removing the desorbed phase and/or the non-adsorbed phase as product, the

improvement which comprises heating the gaseous mixture to be separated by heat exchange with the vacuum pump,



wherein the vacuum pump comprises at least two pumping units having different suction capacities and connected in series.

4,614,526

DUST COLLECTOR WITH IMPROVED COLLECTING ELECTRODES

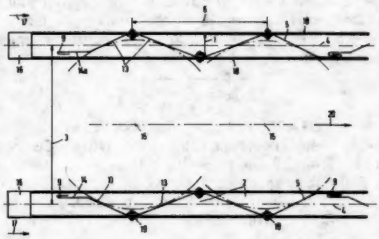
Helmut Gilles, and Wilhelm Leussler, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfort am Main, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,740

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1984, 3408839

Int. Cl.⁴ B03C *3/36, 3/45*

U.S. Cl. 55—130 **5 Claims**



1. In a dust-collecting electrostatic precipitator having a plurality of parallel vertical spaced collecting electrodes defining gas passages between them adapted to be traversed by gas in a horizontal direction, each collecting electrode being formed by an array of contiguous profiled sheet metal strips which are substantially W-shaped in cross-section, an array of vertical corona discharge electrodes being disposed between pairs of said collecting electrodes, the improvement wherein:

(a) the strips comprise inclined portions which are inclined alternately in opposite directions with respect to the direction of gas flow, and between said inclined portions comprise parallel portions extending parallel to the direction of gas flow, whereby said portions define alternating crests and troughs;

(b) said strips have edge portions parallel to the direction of gas flow which at respective ends are reversely bent to form U-shaped hook strips, the hook strips of adjacent edge portions of successive strips of each collecting electrode being hooked together;

(c) the interior angles defined between the inclined portions and the parallel portions of the sheet metal strips are at least 150°;

(d) a perpendicular distance (a) between said parallel portions is 8 to 13% of a center spacing between two adjacent collecting electrode walls;

(e) a center distance of two consecutive crests on the same side of a collecting electrode is 40 to 70% of the center spacing of two opposing collecting electrodes;

(f) each parallel portion which is disposed between two inclined portions has a width of 8 to 13% of the center spacing of two crests on the same side;

(g) each reversely bent end portion defines a clearance which is four to five times the thickness of the sheet metal strip; and

(h) an overall length of each reversely bent portion is about one times to 1.2 times the width of each parallel portion.

4,614,527

DEGASIFIER

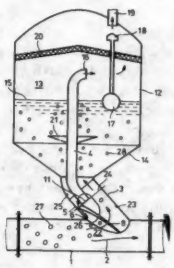
Jörg Reimann, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe G.m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Apr. 12, 1985, Ser. No. 722,403

Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419159

Int. Cl.⁴ B01D *19/00*

U.S. Cl. 55—170 **2 Claims**



1. A degasifier for separating gases from gas/liquid flows in pipelines by means of a pipe section mounted into said pipelines, said pipe section comprising: a branch pipe attached to said pipe section and disposed, with regard to the flow direction at an angle of not more than 90°; container with substantially larger cross-sectional area than the pipes disposed above the branch pipe and being attached to the branch pipe by means of a conical intermediate section; a gas discharge pipe disposed at the container's upper end; a suction pipe arranged with its inlet disposed in the branch pipe above the jointure thereof with the pipe section and extending into the interior of the container above any liquid level therein; a back flow panel arranged in the branch pipe and being attached perpendicularly to the inner surface of the branch pipe, the outer ends of said back flow panel in the branch pipe being bent downward along its inner surface toward said pipe section; the upper end of the back flow panel being situated in approximately the same plane as the inlet of the suction pipe between said suction pipe and the inner surface of the branch pipe so as to block direct communication between the two at their closest point.

4,614,528

DRY AIR BREATHER ASSEMBLY

James W. Lennen, Willow Grove, Pa., assignor to System Development Corp., Camarillo, Calif.

Filed Jun. 24, 1985, Ser. No. 747,878

Int. Cl.⁴ B01D *53/04*

U.S. Cl. 55—387 **8 Claims**

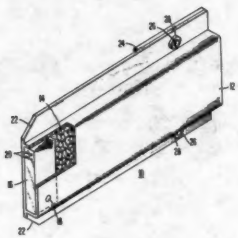
1. A dry air breather assembly for restricting the intake, through breather ports in a device, of ambient vapor having a

high relative humidity which exceeds a predetermined level comprising:

an elongated box-like enclosure having respective corresponding opposite open and closed extremities,

a desiccant having high moisture removal properties at levels above said predetermined level and low moisture removal properties below said level, said desiccant being disposed within said enclosure,

a breather plug situated within the open extremity of said enclosure, said breather plug having a plurality of vapor/desiccant ports formed therein and oriented parallel to the longitudinal axis of said enclosure,



a plurality of desiccant/device ports formed in said enclosure adjacent the closed extremity thereof and oriented transverse to the longitudinal axis of said enclosure,

means for mounting said enclosure on said device, said desiccant/device ports being positioned adjacent said breather ports whereby a vapor path is provided therebetween, and

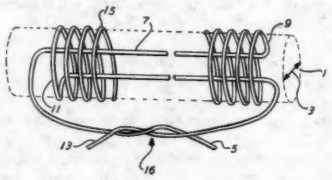
whereby said ambient vapor entering said enclosure via said vapor/desiccant ports in response to pressure differentials is dried by said desiccant and enters said breather ports at a relative humidity level which does not exceed said predetermined level.

4,614,529

GLASS YARN FILTER FOR GAS REGULATORS

Arthur W. Gruber, Virginia Beach, Va., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Sep. 29, 1982, Ser. No. 426,315
Int. Cl.[4] B01D *37/00*
U.S. Cl. 55—520 **8 Claims**



1. A method of making a yarn filter for a fluid line comprising winding a yarn composed of continuous filaments into a helical coil, securing the ends of the yarn so that the coil is transformed into a toroid which can be placed in a fluid line.

7. A trap for removing particulate matter from a flowing gas, comprising:

a gas line with side walls forming a cavity;

a resilient filter comprising a length of yarn of substantially continuous glass filaments which has been formed into a toroid having a closed center and sized to make contact with the side walls of the cavity, and

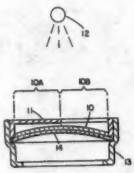
means for retaining the filter in the cavity.

4,614,530

STEP GRADIENT PHOTOCHROMIC GLASS BODY AND PROCESS

Mary H. Sukkar, 2250 E. 25th Pl., Tulsa, Okla. 74114

Continuation-in-part of Ser. No. 428,403, Sep. 29, 1982, abandoned, which is a division of Ser. No. 240,302, Mar. 4, 1981, abandoned. This application Dec. 18, 1984, Ser. No. 682,905
Int. Cl.[4] C03C *4/06*
U.S. Cl. 65—30.11 **2 Claims**



1. A process for manufacturing a precisely controlled photochromic gradient glass body which comprises the steps of:

placing a glass body composed of photochromic or potentially photochromic silver halide-containing glass in a means for heating said body and providing illuminating means which will illuminate selected portions of said body without illuminating the remaining portions

subjecting said glass body to an isothermal heat treatment at a temperature sufficient to develop or redevelop the photochromic properties of the glass while

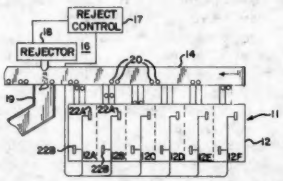
illuminating, via said illuminating means, one or more selected portions of the glass body with light of specific intensity and wavelength of 4000–6500 Å so that photochromic activity is arrested at the portions of the body illuminated by said light while said activity is not arrested at remaining portions of the body which are not illuminated by said light, the illuminating means being controlled such that a desired photochromic pattern is formed in said glass body with desired photochromic gradients being imparted.

4,614,531

GLASS WARE REJECT SYSTEM

William B. Bishop, Deerfield, Ill.; David C. Oftelie, Center City, and M. Victoria Selep, Roseville, both of Minn., assignors to National Can Corporation, Chicago, Ill.

Filed Dec. 17, 1984, Ser. No. 682,326
Int. Cl.[4] C03B *9/40*
U.S. Cl. 65—158 **1 Claim**



1. A ware reject control system for an IS glassware forming machine having multiple operable sections each making respective wares, conveyor means for receiving and transporting said wares as a series of individual wares, a clock signal providing means, said sections operating cyclically responsive to said clocking signals, data processing means operable to control said machine and sections, a ware reject mechanism providing an air jet positioned adjacent said conveyor spaced from said machine and operable to eject said wares from said conveyor, a plurality of manually operable control switch means con-

nected to couple reject signals for controlling said reject mechanism in response to desired operating parameters for said sections including parison save, mold change, program stop and swab cycle functions and said control button means discriminating between the blank mold side and the blow mold side of each of said sections, means providing a selected delay time for correlating the ware made by each section and its conveyor transporting time to said mechanism to control the ejection of selected wares, means for centering the glassware opposite said air jet including means for timing a given ON time of the air jet, means for timing the travel time of the container during the ON time of the air jet, and means for dividing the given ON time by two to determine an actual turn on point of the air jet to assure the air jet is centered on the glassware when the air jet is turned ON, and whereby each reject function is handled similarly as other timed functions of said machine sections.

4,614,532

2,4-DIAMINO-6-HALOGENO-5-ALKYLTHIO-PYRIMIDINES

Michael Schwamborn, Cologne; Engelbert Kühle, Bergisch-Gladbach; Erich Klauke, Odenthal; Ludwig Eue, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach; Hans-Joachim Santel, Cologne, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

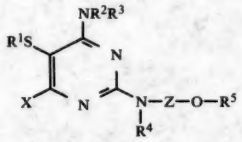
Filed May 3, 1985, Ser. No. 730,393

Claims priority, application Fed. Rep. of Germany, May 10, 1984, 3417264

Int. Cl.[4] A01N *43/54*; C07D *239/48*

U.S. Cl. 71—92 **8 Claims**

1. A 2,4-diamino-6-halogeno-5-alkylthiopyrimidine of the formula



wherein

X represents halogen,

R^1 represents alkyl which has 1 to 6 C atoms and which is optionally substituted by halogen,

R^2 represents hydrogen or alkyl with 1 to 6 C atoms,

R^3 represents hydrogen, alkyl or alkoxyalkyl with 1 to 6 C atoms in each alkyl moiety,

R^4 represents hydrogen or alkyl with 1 to 6 C atoms,

Z represents a branched or straight-chain alkylene group with 2 to 10 C atoms, and

R^5 represents alkyl with 1 to 6 C atoms.

8. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,614,533

HERBICIDAL 5-AMINO-1-PHENYLPYRAZOLES

Otto Schallner, Monheim; Reinhold Gehring, Wuppertal; Erich Klauke, Odenthal; Jörg Stetter, Wuppertal; Heinz-Jürgen Wroblowsky, Langenfeld; Robert R. Schmidt, Bergisch-Gladbach, and Hans-Joachim Santel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

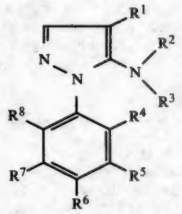
Filed Jan. 10, 1985, Ser. No. 690,347

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402308

Int. Cl.[4] A01N *43/56, 57/16*

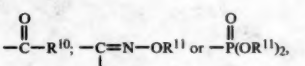
U.S. Cl. 71—92 **7 Claims**

1. A method of combating unwanted vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a 5-amino-1-phenyl-pyrazole of the formula



in which

R^1 represent hydrogen, nitroso, nitro, halogen, C_{1-6} alkyl, C_{1-6} halogenoalkyl with up to 9 halogen atoms, or represents unsubstituted phenyl or phenyl substituted by halogen, nitro, alkyl, alkoxy, and/or halogenoalkyl, each having up to 4 carbon atoms, or represents one of the radicals $-S(O)_n-R^9$;



R^2 represents hydrogen or a radical

R^3 independently or R^2 represents the same radicals as R^2 and additionally represents alkyl having up to 4 carbon atoms,

R^4 and R^6 independently of one another represent cyano, nitro, halogen, alkyl, alkoxy, alkoxy carbonyl, each of which has up to 4 carbon atoms and furthermore represents halogenoalkyl or halogenoalkoxy, each of which has up to 4 carbon atoms and up to 9 halogen atoms or represents a radical $-S(O)_n-R^{13}$, and

R^5, R^7 and R^8 independently of one another and of R^4 and R^6 represent the same radicals as R^4 and R^6 and additionally represent hydrogen, and

R^9 represents hydrogen, hydroxyl, amino, fluorine, chlorine, bromine, alkylamino, dialkylamino, alkyl, halogenoalkyl, each of which has up to 4 carbon atoms in the individual alkyl parts, and said halogenoalkyl having up to 9 halogen atoms and R^9 also represents unsubstituted phenyl or phenyl substituted by halogen, alkyl, alkoxy and/or halogenoalkyl, each of which has up to 4 carbon atoms, and said halogenoalkyl having up to 9 halogen atoms,

R^{10} represents hydrogen, alkyl having up to 4 carbon atoms, or unsubstituted phenyl or phenyl substituted by halogen,

alkyl, alkoxy and or halogenoalkyl, each of which has up to 4 carbon atoms, said halogenoalkyl having up to 9 halogen atoms,

R^{11} represents hydrogen, alkyl alkenyl or alkinyl, each of which has up to 8 carbon atoms, halogenoalkyl having up to 4 carbon atoms and up to 6 halogen atoms and phenylalkyl having up to 4 carbon atoms in the alkyl part,

R^{12} represents hydrogen, alkyl which has 1 to 12 carbon atoms, alkenyl, alkinyl, alkoxyalkyl, alkylthioalkyl, alkoxy, alkylthio, alkylamino, dialkylamino or halogenoalkyl, each of which has up to 4 carbon atoms in the individual alkyl parts, said halogenoalkyl having up to 9 halogen atoms and furthermore represents unsubstituted cycloalkyl which has 3 to 7 carbon atoms or cycloalkyl substituted by halogen, lower alkyl and/or lower halogenoalkyl, or represents phenyl, phenoxy, phenylthio or phenylamino, each of which is unsubstituted or substituted by halogen, alkyl, alkoxy and/or halogenoalkyl, each of which has up to 4 carbon atoms, and the halogenoalkyl having up to 9 halogen atoms,

R^{13} represents amino, alkyl, halogenoalkyl, alkylamino or dialkylamino, each of which has up to 4 carbon atoms in the individual alkyl parts and, the halogenoalkyl having up to 9 halogen atoms,

X represents oxygen or sulphur, and

n represents the numbers 0, 1 or 2.

4,614,534

5-AMINO-4-HETEROCYCLYL-1-PHENYLPYRAZOLES

Jörg Stetter; Reinhold Gehring; Markus Lindig, all of Wuppertal; Otto Schallner, Monheim; Ludwig Eue, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach; Hans-Joachim Santel, Cologne, and Klaus Lürssen, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

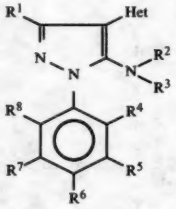
Filed Jun. 4, 1985, Ser. No. 741,325

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423101

Int. Cl.[4] **A01N** *43/56, 43/653;* **C07D** *403/04*

U.S. Cl. 71—92 **12 Claims**

1. A 5-amino-4-heterocyclyl-1-phenylpyrazole of the formula



in which

R^1 represents hydrogen or straight-chain or branched alkyl with 1 to 8 carbon atoms,

R^2 represents hydrogen or a radical

R^3 represents hydrogen,

or alkyl, alkenyl or alkinyl with up to 4 carbon atoms,

R^4, R^5, R^6,, R^7 and R^8 independently of one another represent hydrogen, cyano, nitro, halogen or alkyl, alkoxy or alkoxycarbonyl with in each case up to 4 carbon atoms, or represent halogenoalkyl or halogenoalkoxy with in each case up to 4 carbon atoms and up to 9 halogen atoms, or represent a radical $—S(O)_n—R^{10}$,

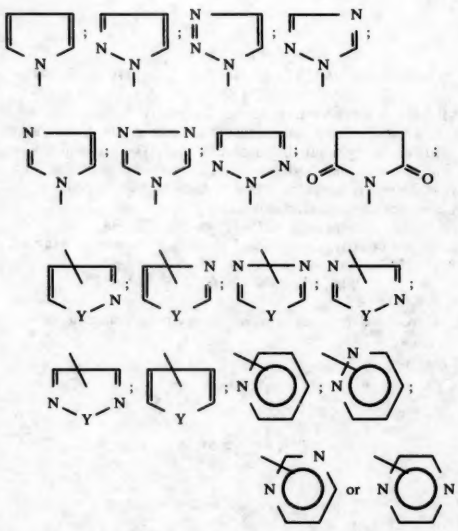
R^9 represents hydrogen or alkyl, alkenyl, alkinyl, alkoxyalkyl, alkylthioalkyl, alkoxy, alkylthio, alkylamino, dialkylamino or halogenoalkyl with in each case up to 4 carbon atoms in the individual alkyl parts and, in the case of halogenoalkyl, with up to 9 halogen atoms, or represents cycloalkyl which has 3 to 7 carbon atoms and is optionally substituted by halogen, lower alkyl and lower halogenoalkyl, or represents phenyl, phenoxy, phenoxyalkyl, phenylthio or phenylamino, in each case optionally substituted on the phenyl by halogen, lower alkyl, lower alkoxy and lower halogenoalkyl;

R^{10} represents amino or alkyl, alkylamino, dialkylamino or halogenoalkyl with in each case up to 4 carbon atoms in the individual alkyl parts and, in the case of halogenoalkyl, with up to 9 halogen atoms,

X represents oxygen or sulphur,

n represents the number 0, 1 or 2,

Het represents a heterocyclic radical of the formula



which is optionally substituted by halogen, nitro, or alkyl, alkoxy, alkylthio and/or halogenoalkyl with in each case up to 4 carbon atoms and, where appropriate, up to 9 halogen atoms, and

Y in each case represents oxygen, sulphur or an N-alkyl radical with up to 4 carbon atoms.

9. A method of combating undesired vegetation which comprises applying to such vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim **1**.

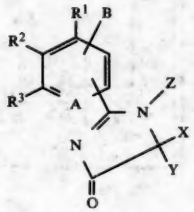
11. A method of regulating the growth of plants which comprises applying to such plants or to a locus in which such plants are grown a plant growth-regulating effective amount of a compound according to claim **1**.

4,614,535
HERBICIDAL IMIDAZOLINONES

Roland Schmierer, Gersthofen; Reinhard Handte, Gablingen; Rainer Liebl, Gersthofen; Hilmar Mildenberger, Kelkheim; Klaus Bauer, Rodgau; Hermann Bieringer, Eppstein, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1984, Ser. No. 669,620
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 3340595
Int. Cl.[4] A01N *43/50;* C07D *401/02, 233/70*
U.S. Cl. 71—92 5 Claims

1. An imidazolinone of the formula I



in which

A denotes N or C–R^4;

B denotes halogeno (C_1–C_2) alkyl, wherein halogen means fluorine, chlorine or bromine, or (C_1–C_4) alkoxymethyl, cyanomethyl or thiocyanatomethyl;

X denotes (C_1–C_4) alkyl; and

Y denotes (C_1–C_6)alkyl, cyclo (C_3–C_6) alkyl, (C_2–C_4) alkenyl, (C_2–C_4) alkinyl, phenyl or benzyl; or

X and Y, together with the carbon atom to which they are bonded, denoted a spirocyclo (C_3–C_6) alkyl group which is optionally substituted by —CH_3;

Z denotes hydrogen, (C_1–C_4) alkyl, which can be substituted by (C_1–C_4) alkoxycarbonyl, or (C_3–C_4) alkenyl, propargyl, —CO—R^5 or —SO_2—R_6;

R^1, R^2, R^3 and R^4 independently of one another denote hydrogen, halogen, (C_1–C_4) alkyl, (C_1–C_6) alkoxy, (C_1–C_6) alkoxycarbonyl, halogeno (C_1–C_2) alkyl, nitro, cyano, phenoxy or phenyl, which can optionally be substituted by (C_1–C_4) alkyl, (C_1–C_4) alkoxy or halogen, it also being possible for in each case two radicals R^1, R^2, R^3 and R^4 in the o-position relative to one another together to form the grouping —CH=CH—CH=CH—;

R^5 denotes (C_1–C_{12}) alkyl, which is optionally substituted by up to two (C_1–C_4) alkoxy groups or by up to three halogen; phenyl, which can be substituted by up to two halogen or a methyl, nitro or methoxy group; or cyclo (C_3–C_7) alkyl, (C_1–C_4) alkoxy, (C_1–C_4)alkoxycarbonyl, benzyloxy, phenoxy or —NR^7R^8;

R^6 denotes (C_1–C_4) alkyl, CF_3, CCl_3, phenyl, chlorophenyl or methylphenyl;

R^7 denotes hydrogen or (C_1–C_4) alkyl; and

R^8 denotes (C_1–C_4) alkyl, phenyl, chlorophenyl, methylphenyl, amino or mono- or di(C_1–C_4) alkylamino,

or an optical isomer thereof (if X≠Y), an acid addition salt or N-oxide (if A represents N).

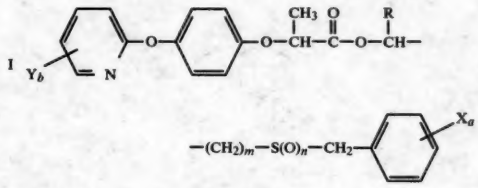
5. A method of combating undesired plants and for regulating plant growth, which comprises applying an effective amount of a compound of the formula (I) as claimed in claim 1 to an area to be treated or to the plants to be treated.

4,614,536
CERTAIN PYRIDYLOXY-PHENOXY-PROPIONATE DERIVATIVES, HERBICIDAL COMPOSITIONS CONTAINING SAME AND THEIR HERBICIDAL METHOD OF USE

Junichi Saito; Kazuomi Yasui, both of Tokyo; Kozo Shiokawa, Kanagawa, and Atsumi Kamochi, Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo, K.K., Tokyo, Japan

Division of Ser. No. 483,974, Apr. 11, 1983, Pat. No. 4,500,346.
This application Sep. 13, 1984, Ser. No. 650,338
Claims priority, application Japan, Apr. 20, 1982, 57-64702
The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.
Int. Cl.[4] C07D *213/64;* A01N *43/40*
U.S. Cl. 71—94 21 Claims

1. A substituted phenoxypropionate of the formula



in which

Y represents a halogen atom or a trifluoromethyl group;

b is 1 or 2,

R represents a hydrogen atom or a methyl group,

X represents a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group or a lower alkoxy group,

a and m independently is 1 or 2, and

n is 0.

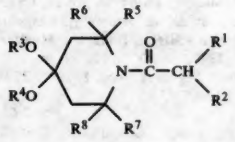
18. A method of combating weeds which comprises applying to the weeds, or their habitat, a herbicidally effective amount of a substituted 2-pyridyloxy-phenoxypropionate as claimed in claim 1.

4,614,537
N-ACYL-PIPERIDONE KETAL COMPOUNDS AND THEIR USE AS ANTIDOTES FOR PROTECTING CROP PLANTS FROM HERBICIDAL DAMAGE

Hans-Jochem Riebel, Wuppertal; Ludwig Eue, Leverkusen; Wilfried Faust, Odenthal, and Uwe Priesnitz, Unna-Massen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 425,801, Sep. 28, 1982, Pat. No. 4,548,639, which is a continuation of Ser. No. 166,280, Jul. 7, 1980, abandoned. This application Oct. 25, 1983, Ser. No. 545,472
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930449
Int. Cl.[4] A01N *25/32;* C07D *211/46, 211/74*
U.S. Cl. 71—94 9 Claims

1. N-acyl-piperidone ketal compound of the formula



(I)

wherein

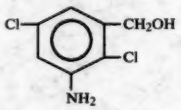
R^1 is alkyl with from 1 to 4 carbon atoms or chlorine;

R^2 is chlorine;

R^3 and R^4 together represent an alkylene chain of 2 to 3 carbon atoms; and
R^5, R^6, R^7 and R^8 are hydrogen.

4,614,538
HERBICIDAL COMPOSITION
Kou-Chang Liu, Wayne, N.J., assignor to GAF Corporation, Wayne, N.J.
Continuation-in-part of Ser. No. 568,999, Jan. 9, 1984, Pat. No. 4,543,426. This application Mar. 1, 1985, Ser. No. 707,300
Int. Cl.[4] E05B *63/14*
U.S. Cl. 71—121 **1 Claim**

1. A herbicidal composition containing a herbicide of the formula



and an inert carrier therefor.

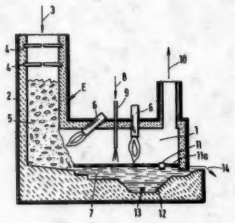
4,614,539
PROCESS FOR AGGLOMERATING MINERAL ORE CONCENTRATE UTILIZING EMULSIONS OF POLYMER BINDERS OR DRY POLYMER BINDERS
Meyer R. Rosen, Spring Valley, and Lawrence Marlin, Yorktown Heights, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Filed May 21, 1985, Ser. No. 736,237
Int. Cl.[4] C22B *1/243, 1/4;* C04B *25/00*
U.S. Cl. 75—3 **74 Claims**

1. A process of agglomerating a particulate material comprising:
commingling said particulate material with a binding amount of water soluble, high molecular weight polymers, said polymers being adapted to be selectively usable in at least one of either of two conditions of use,
in a first condition of use being applied to said particulate material as a dry powder and, in a second condition of use being applied to said particulate material in a water-in-oil emulsion.

4,614,540
PROCESS FOR THE REMOVAL OF CONTAMINATING ELEMENTS FROM PIG-IRON, STEEL, OTHER METALS AND METAL ALLOYS
Sándor Nagy; József Mészáros; Ákos Bán; János Horváth; András Pethes, all of Budapest; Lajos Schottner, Ózd, and János Sziklavári, Budapest, all of Hungary, assignors to Vasipari Kutato es Fejleszto Vallalat, Budapest, Hungary
Filed Jul. 31, 1985, Ser. No. 760,991
Claims priority, application Hungary, Aug. 1, 1984, 2934/84
Int. Cl.[4] C21C *7/00*
U.S. Cl. 75—59.13 **7 Claims**

1. A process for the removal of contaminating chemical elements from pig iron, steel, and other metals, as well as metal alloys, in the course of refining processes with an oxygen blast, which comprises the step of controlling the quantity of free oxygen radicals and temperature of the smelting bath by introducing ozone or carbon dioxide.

4,614,541
METHOD OF CONTINUOUS METALLURGICAL PROCESSING OF COPPER-LEAD MATTE
Gerhard Berndt, Seevetal, and Werner Marnette, Hollenstedt, both of Fed. Rep. of Germany, assignors to Norddeutsche Affinerie Aktiengesellschaft, Hamburg, Fed. Rep. of Germany
Filed Aug. 16, 1985, Ser. No. 766,756
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3429972
Int. Cl.[4] C22B *15/00*
U.S. Cl. 75—74 **3 Claims**



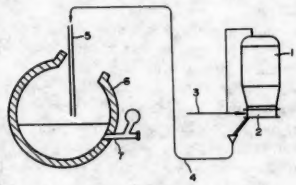
1. A method for continuously processing copper-lead matte containing by weight 15 to 50% copper, 10 to 60% lead, 10 to 25% sulfur, 0 to 30% iron and usual impurities, which comprises continuously and in sequence carrying out the steps of:
(a) smelting and treating said copper-lead matte in a first processing stage under reducing, neutral or oxidizing conditions, at temperatures in excess of 1250° C. to produce a molten bath and maintaining said bath under high turbulence to vaporize volatile lead and incorporate it in a fine dust, and to produce liquid matte containing less than 20% by weight lead as well as metallic lead in the form of a copper-containing lead alloy such that:
when the copper-lead matte contains iron, the iron is oxidezed and CaO-containing substances are added so that the oxidized iron is incorporated in a lime ferrite slag which contains about 10 to 20% by weight CaO, and
when the copper-lead matte has a low iron content, a fuel is burned to melt and overheat the copper-lead matte with a neutral or reducing flame, and turbulence in the bath for the volatilization of impurities is produced by blowint the bath with an inert gas;
(b) at a location spatially separated from that of step (a) and subsequent thereto blowing said liquid matte with a gas containing free oxygen in a second processing stage while said liquid matte is maintained at a temperature in excess of 1250° C., to form a high-oxygen converter slag and in coexistence therewith a converter copper having a lead content below 1% by weight and residual volatilizable impurities still contained in the matte are incorporated in a fine dust; and
(c) refining said converter copper, which contains less than 1% by weight lead and arsenic and antimony impurities in a third processing stage by blowing it with a gas which contains free oxygen so as to slag the impurities by a selective oxidation effected in the presence of an added slag-forming substance, thereby producing a prerefined copper.

4,614,542

METHOD OF OPERATING A COPPER CONVERTER

Takayoshi Kimura, and Seiichi Tsuyuguchi, both of Niihama, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Aug. 23, 1985, Ser. No. 768,561
Claims priority, application Japan, Aug. 31, 1984, 59-182211
Int. Cl.[4] C22B *15/00*
U.S. Cl. 75—76 8 Claims



1. In a method of producing copper from a matte containing copper, iron and sulfur in a copper converter which includes a lance extending downwardly therein, the method including the steps of heating said matte in the copper converter to make it molten, blowing oxygen into said molten matte to produce SO_2 gas, adding a cold flux to said molten matte to form an iron silicate slag, and adding a cold charge of matte to said molten matte, the improvement wherein at least a portion of said cold flux is in the form of a powder, wherein at least a portion of said cold charge of matte is in the form of a powder, and wherein said portions of cold flux and cold charge of matte are blown through said lance onto the surface of said molten matte in said copper converter such that temperature variations in the molten matte due to addition of said cold flux and cold charge of matte is reduced.

4,614,543

MIXED LIXIVIANT FOR SEPARATE RECOVERY OF ZINC AND LEAD FROM IRON-CONTAINING WASTE MATERIALS

Willem P. C. Duyvesteyn, Benthuisen, Netherlands, and Mahesh C. Jha, Arvada, Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 31, 1985, Ser. No. 696,978
The portion of the term of this patent subsequent to Sep. 9, 2003, has been disclaimed.
Int. Cl.[4] C22B *3/00*
U.S. Cl. 75—101 R 5 Claims

1. A process for the hydrometallurgical treatment of finely divided steel plant flue dusts containing by weight about 20% to 60% iron, about 5% to 40% zinc and about 0.5% to 6% lead as oxides, and also containing at least one other metal value selected from the group consisting of oxides of calcium, manganese, silicon, magnesium, aluminum, cadmium, copper, which comprises,

forming an aqueous slurry of said steel plant flue dust with a mixed lixiviant comprising HCl and H_2SO_4,

the amount of sulfate ion concentration being in excess of the chloride ion concentration and in stoichiometric excess of that required to sulfate substantially all of the lead and calcium present,

the amount of chloride ion present as HCl being at least about 6g/l sufficient to maintain the pH at about 1 to 4,

leaching said steel plant flue dust at a temperature ranging from ambient to below the boiling point for a time at least sufficient to effect dissolution of at least said zinc and said at least one other metal value and form a residue containing at least iron oxide, calcium sulfate and lead sulfate,

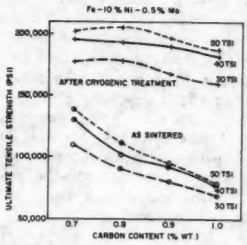
and then separating said residue from the solution containing said metal values.

4,614,544

HIGH STRENGTH POWDER METAL PARTS

Chaman Lall, Claymont, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 693,984, Jan. 23, 1985, abandoned. This application Oct. 22, 1985, Ser. No. 793,686
Int. Cl.[4] C22C *29/00*
U.S. Cl. 75—246 8 Claims



1. A process for making a high strength powder metal part comprising the steps of

combining components including iron, nickel and carbon to form a powder metal alloy mixture,

forming the powder metal alloy mixture into the desired part shape with the aid of a lubricant,

sintering the formed part in a dissociated ammonia atmosphere, and

cryogenically cooling the sintered part.

4,614,545

HYDROXYPROPYL METHYL CELLULOSE THICKENING AGENTS FOR ORGANIC LIQUIDS

Roland H. P. Hess, Au, Switzerland, assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 15, 1985, Ser. No. 765,788
Int. Cl.[4] C08L *1/08;* C08G *56/68*
U.S. Cl. 106—169 13 Claims

1. A method for thickening an organic liquid or a mixture thereof with water by adding a thickening amount of a hydroxypropyl methyl cellulose ether which has a methoxyl substitution of from 21% to 35%, a hydroxypropoxyl substitution of from 18% to 35% and a sum of the methoxyl and hydroxypropoxyl substitution of from 39% to 70% and which has a viscosity of at least about 1,000 mPa·s as a 2 weight percent aqueous solution at 20° C.

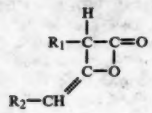
4,614,546

SIZES BASED ON KETENE DIMERS

Wolf-Dieter Schröer, Leverkusen; Ulrich Beck, Bornheim; Peter Mummenhoff, Cologne, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 486,466, Apr. 19, 1983, abandoned. This application May 29, 1985, Ser. No. 738,640
Claims priority, application Fed. Rep. of Germany, May 3, 1982, 3216414
Int. Cl.[4] C08L *3/00*
U.S. Cl. 106—213 8 Claims

1. Aqueous sizes based on ketene dimers, which contain (a) ketene dimers of the formula



(I)

in which R_1 and R_2 are identical or different and represent hydrocarbon radicals having 6 to 30 carbon atoms,

(b) amine-modified starch,

(c) hydrophobic compound (s) which contain (s) one or more functional groups which are reactive towards OH groups within a pH range of 2 to 6 in an amount of 0.2 to 0.7 mol of reactive functional group per 1000 parts by weight of ketene dimer said hydrophobic compound (s) being selected from the group consisting of acid halides which are derived from fatty acids having 12 to 30 carbon atoms or isocyanates, which contain hydrocarbon radicals having 14 to 36 carbon atoms.

4,614,547

AZINE PIGMENTS

Rütger Neeff, deceased, late of Leverkusen, Fed. Rep. of Germany (by Käte Neeff, heiress); Meinhard Rolf, and Walter Müller, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

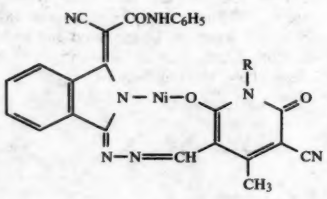
Filed Aug. 19, 1985, Ser. No. 767,220

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1984, 3430800

Int. Cl.[4] C09D 5/00

U.S. Cl. 106—288 Q **9 Claims**

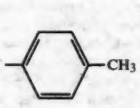
1. Pigments which, in one of their tautomeric forms, have the formula



(I)

in which

R signifies $-CH_3$ or



and which, in the event that R is $-CH_3$, are present in the β-modification which is characterised by the lattice plane spacings d/Å 13.33, 12.67, 9.17 and 15.15 having the relative intensities 100, 100, 60 and 2%.

4,614,548

CHROMATOGRAPHIC SEPARATION OF DEXTROSE FROM STARCH HYDROLYSATE

Lawrence E. Cameron, Waterloo, and Robert H. M. Stouffs, Brussels, both of Belgium, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Aug. 23, 1984, Ser. No. 643,591

Claims priority, application United Kingdom, Aug. 31, 1983, 8323383

Int. Cl.[4] C13K 1/06

U.S. Cl. 127—40 **18 Claims**

1. A process for converting starch to dextrose comprising

(a) hydrolysing an aqueous starch composition to a dextrose-containing starch hydrolysate;

(b) contacting said starch hydrolysate with a chromatographic column or bed to absorb dextrose on said column or bed and to produce an aqueous raffinate;

(c) eluting the dextrose with water; and

(d) contacting the aqueous raffinate with an immobilized glucoamylase to produce an aqueous dextrose-containing solution, which is recycled, at least in part, and used as the eluant for said chromatographic column or bed.

4,614,549

METHOD FOR ENZYMATIC CLEANING AND DISINFECTING CONTACT LENSES

Lai Ogunbiyi, Fairport; Thomas M. Riedhammer, Rochester, and Francis X. Smith, Walworth, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 545,314, Oct. 24, 1983, abandoned. This application Jan. 9, 1985, Ser. No. 690,364

Int. Cl.[4] B08B 3/10

U.S. Cl. 134—19 **26 Claims**

1. A single step method for simultaneously (1) cleaning contact lenses of proteinaceous and other deposits using a proteolytic enzyme in aqueous solution, and (2) disinfecting the contact lenses, comprising placing the lenses in a solution comprising a proteolytic enzyme dissolved in water at about room temperature and then heating the solution and lenses to an elevated temperature of more than 60° C. and less than 100° C. for a period of time of 60 minutes or less, sufficient to clean and disinfect the lenses.

4,614,550

THERMOMECHANICAL TREATMENT PROCESS FOR SUPERALLOYS

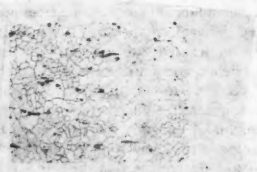
Alain R. Leonard, Saint-Michel, and Jannick J. M. L. Leray, Saint-Germain-les-Corbeil, both of France, assignors to Societe Nationale d'Etude et de Construction de Meteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed Dec. 19, 1984, Ser. No. 683,514

Claims priority, application France, Dec. 21, 1983, 83 20436

Int. Cl.[4] C22F 1/10

U.S. Cl. 148—11.5 N **15 Claims**



1. In a process for thermodynamically treating a superalloy wherein hardening is effected by precipitation comprising final shaping, finishing and final heating steps, the improvement wherein the final shaping step comprises the following sequence of steps:

(a) heating the superalloy at between about 960° C. and 1050° C. for between about 15 and 60 minutes;
(b) deforming the thus heated superalloy by hot compression to attain a degree of deformation of about ≧30, the heating being at a temperature and for a period of time and a degree of deformation effective to produce a duplex-type recrystallization structure;
(c) isothermally treating the thus deformed superalloy at a temperature of about >960 for a period of time of between about 30 and 60 minutes;
(d) deforming the treated superalloy by hot compression at a temperature and for a period of time effective to attain a degree of deformation of between about 8 and 25%; and
(e) annealing the thus deformed superalloy at a temperature and for a period of time effective to attain a homogeneously precipitated structure having grains of about ≧6 ASTM and lacking a parasitic phase.

4,614,551

PROCESS FOR PRODUCING LOW YIELD RATIO, HIGH STRENGTH TWO-PHASE STEEL SHEET HAVING EXCELLENT ARTIFICIAL AGEING PROPERTY AFTER WORKING

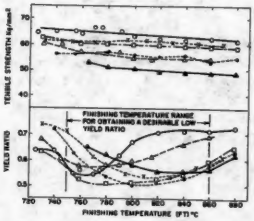
Takashi Furukawa; Michio Endo, both of Tokyo; Nagayasu Takemoto, Aichi, and Kunio Watanabe, Osaka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 3, 1985, Ser. No. 740,352

Claims priority, application Japan, Jan. 12, 1979, 54-1229; Aug. 15, 1979, 54-103175

Int. Cl.⁴ C21D *7/14*

U.S. Cl. 148—12 F **16 Claims**


TENSILE STRENGTH kg/mm²
YIELD RATIO
FINISHING TEMPERATURE RANGE FOR OBTAINING A DESIRABLE LOW-YIELD RATIO
FINISHING TEMPERATURE (F.T.)°C

1. A process for producing a low yield ratio, high strength two-phase steel sheet having an excellent artificial aging property after working, comprising:

hot rolling a steel composition containing 0.03 to 0.13% C, 0.8 to 1.7% Mn, from between 1.0% to 2.0% Si, not more than about 0.1% Al, with the balance being Fe and unavoidable impurities, with a finishing temperature ranging from 750° C. to 860° C.;

rapidly cooling the hot rolled steel to a temperature not higher than 230° C. within a temperature variation within a range of not more than 100° C., at an average cooling rate ranging from 30° C./second to not more than 500° C./second; and

coiling the strip thus cooled to produce a steel having an artificial aging property after working (increment yield strength) of no less than 6 kg/mm².

4,614,552

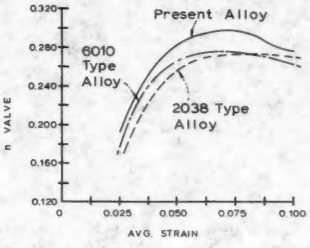
ALUMINUM ALLOY SHEET PRODUCT

Paul E. Fortin, and Michael J. Bull, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 539,611, Oct. 6, 1983, abandoned. This application Aug. 5, 1985, Ser. No. 762,566

Int. Cl.⁴ C22C *21/02*

U.S. Cl. 148—417 **8 Claims**



1. Aluminum alloy sheet constituted of an alloy consisting essentially of 0.65–0.79% Cu, 0.62–0.82% Mg, 0.60–1.0% Si, 0.10–0.50% Mn, up to 0.40% Fe, up to 0.10% Ti, balance Al.

4,614,553

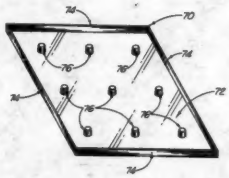
METHOD OF MANUFACTURING ACOUSTIC PANELS FOR CONTROLLING REVERBERATION OF SOUND IN ENCLOSED ENVIRONMENTS

John C. Allred, 798 47th St., Los Alamos, N. Mex. 87544

Continuation-in-part of Ser. No. 614,653, May 29, 1984. This application Sep. 19, 1984, Ser. No. 651,907

Int. Cl.⁴ B32B *13/00*

U.S. Cl. 156—39 **13 Claims**



1. A method of manufacturing acoustic panels comprising the steps of:

pouring a cement into a container, said container having at least one form extending from the bottom of said container upwardly;

placing a fibrous layer of material in surface-to-surface relationship with said cement in said container, said form extending into said fibrous layer;

solidifying said cement into a rigid layer, said rigid layer adhering to said fibrous layer; and

removing said rigid layer and said fibrous layer from said container.

4,614,554

METHOD OF MAKING A GASKET

Cecil A. Bate, Ickenham, and Kay Robinson, West Drayton, both of England, assignors to Payen International Limited, England

Filed Sep. 13, 1984, Ser. No. 650,083

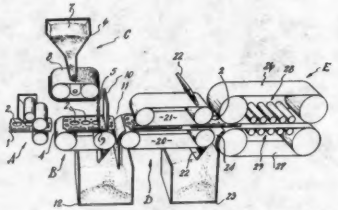
Claims priority, application United Kingdom, Sep. 16, 1983, 8324887

Int. Cl.⁴ B32B *31/12, 15/16*

U.S. Cl. 156—62.2 **5 Claims**

1. A method of making a cylinder head gasket for an internal

combustion engine comprising pressing particles of expanded graphite onto the face of an apertured reinforcement plate whose apertures correspond to the engine cylinder bores, adjacent apertures being bridged by a relatively narrow area, to compact the particles and unite them with the plate, by passing the apertured reinforcement plate carrying particles of



expanded graphite on its face but not within its apertures and without lateral support for the graphite particles between two compressor belts, one of the belts being provided with means through which, via the reinforcement plate apertures, air displaced from the expanded graphite particles during compaction can escape.

4,614,555

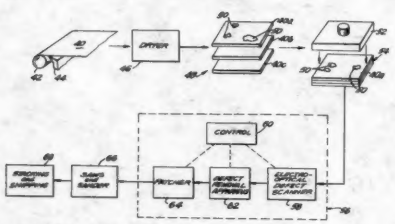
APPARATUS AND PROCESS FOR MAKING PLYWOOD USING CONTROL MEANS AND PATCHING MATERIAL

Albert C. Smith, and Dennis W. Owen, both of Eugene, Oreg., assignors to Champion International Corporation, Stamford, Conn. and Williamette Valley Co., Eugene, Oreg.

Filed Mar. 18, 1985, Ser. No. 712,756

Int. Cl.[4] B32B *35/00*

U.S. Cl. 156—64 **11 Claims**



1. A continuous process for manufacturing plywood panels, said process including the steps of:

providing a plurality of sheets of wood veneer, each said sheet having a pluralilty of defects therein, said defects being of non-uniform size and shape;

adhering said sheets in face-to-face relationship to form the plywood panel;

electro-optically scanning at least one surface of the plywood panel to sense the location, size and shape of each said defect therein;

storing the electro-optically sensed location, size and shape data for each said defect;

routing out portions of the panel substantially corresponding to the location, size and shape of each said defect as indicated by the stored data; and

applying a patching compound to the locations on said panel where each said defect had been, said patching compound being applied in an amount substantially corresponding to the volume of the removed defect as indicated by the stored data.

4,614,556

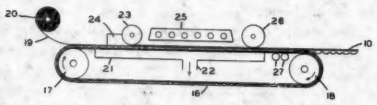
METHOD FOR MAKING DECORATIVE PRODUCT

William F. Fry, Columbia, and Rickie L. Sitler, Wrightsville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 16, 1984, Ser. No. 600,377

Int. Cl.[4] B32B *5/18, 31/14*

U.S. Cl. 156—78 **19 Claims**



1. A method for making a decorative product suitable as a floor covering comprising

forming on a top layer of synthetic organic polymeric material a relief pattern including a plurality of individual raised segments extending upwardly on one surface of said top layer each surrounded by interconnected substantially uniplanar recessed segments by

advancing a heat-softened sheet of said synthetic organic polymeric material over casting means having a patterned surface thereon, and

applying pressure to one surface of said heat-softened sheet of synthetic organic polymeric material to conform said sheet to the patterned surface of said casting means

thereby to impart on said sheet of synthetic organic polymeric material the reverse pattern of the patterned surface of said casting means, and

uniting said patterned top layer to a base layer comprising a thermoplastic ethylene interpolymer selected from the group consisting of ethylene and vinyl-acetate; ethylene and acrylic acid; ethylene and methacrylic acid; ethylene and ethyl acrylate; ethylene and butyl or isobutyl acrylate; ethylene and methyl methacrylate; ethylene, vinyl acetate and methacrylic acid; and ethylene vinyl acetate and carbon monoxide, and mixtures of said copolymers by bonding the reverse side of said relief pattern on said top layer to said base layer.

4,614,557

PRESSURE RETAINING ENCLOSURE

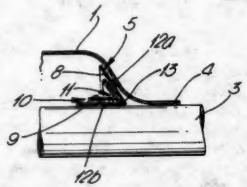
Marc Wille, Baal; Rik Verhoeven, and Rik Van Emelen, both of Kessel-Lo, all of Belgium, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 8, 1985, Ser. No. 689,623

Claims priority, application United Kingdom, Jan. 10, 1984, 8400507

Int. Cl.[4] B29C *27/00;* **B32B** *31/04*

U.S. Cl. 156—85 **16 Claims**



1. A method of forming an enclosure around an elongate substrate which comprises:

(a) positioning around the substrate a flexible sealing strip which is re-entrant in transverse cross-section, which has an open end and which has an opposing end, the step of positioning occurring by wrapping the strip around the substrate such that the ends of the strip overlap one an-

other and the open end is positioned to lie within the opposing end; and

(b) positioning a cover around the substrate and the strip such that a seal between the substrate and the cover is susceptible to peel by pressure within the enclosure adjacent the seal;

said strip bridging the seal by means of a first surface which contacts the cover and a second surface which contacts the substrate so that a leak path through the open end to the seal is closed by the opposing end portion of the strip which is either forced against the open end by pressure within the enclosure, or which balances pressure within the open end, thereby reducing or eliminating the peel.

4,614,558

METHOD AND APPARATUS FOR MAKING A SURFACE-LINED ARTICLE

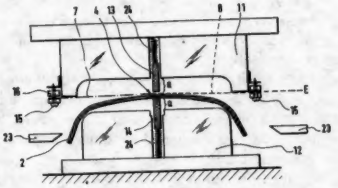
Michael Kobe, Wasserburg, Fed. Rep. of Germany, assignor to Plastifol-Manfred Rothe KG., Fed. Rep. of Germany

Filed Dec. 11, 1984, Ser. No. 680,387

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345626

Int. Cl.⁴ B32B *31/10*

U.S. Cl. 156—163 **5 Claims**



1. A method for making a shaped article particularly as an interior facing shaped article for a motor vehicle, the shaped article including a backing member and surface lining material, comprising the steps of positioning surface material in a temperature adjusted die assembly in the form of at least two cuttings having at least one overlap or abutment therebetween, clamping the surface material in the die assembly, heating a backing member in its undeformed state, introducing the heated undeformed backing member into the die assembly with the surface material and backing member facing one another, applying pressure on both sides of the clamped surface material and backing member to bring them into pressure contact with one another along the overlap or abutment, the pressure being applied by gripper element means on each side thereof respectively carried by the die assembly, and closing the die assembly to deform the surface material and backing member together to bond the surface material and backing member to one another and to form the surface material and backing member into the finally shaped article having the two cuttings bonded to different areas of the backing member.

4,614,559

METHOD OF FABRICATING MULTILAYER PRINTED-CIRCUIT BOARD

Hisato Shirasawa; Norio Sengoku, and Nobuaki Ohki, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 684,791

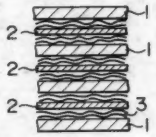
Claims priority, application Japan, Dec. 23, 1983, 58-241918

Int. Cl.⁴ B32B *31/00*; C09J *5/02*

U.S. Cl. 156—182 **4 Claims**

1. A method of fabricating a multilayer printed-circuit board in which a plurality of internal layer sheets, are stacked and laminated together, each of the internal layer sheets having at least one circuit pattern layer and an insulation portion, comprising the steps of:

stacking a first plurality of the internal layer sheets, each having an insulation portion that is relatively thick, and a second plurality of the internal layer sheets, each having an insulation portion that is thinner than the relatively thick insulation portion of the first plurality of the internal



layer sheets, alternately with one another, with an adhesive material being interposed between individual internal layer sheets, and melting said adhesive material to thereby laminate said stacked internal layer sheets together.

4,614,560

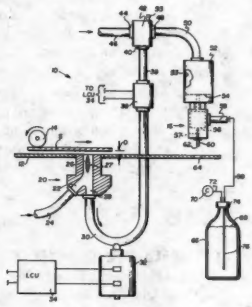
PNEUMATIC ADHESIVE CONTROL SYSTEM

Ernest J. Tamary, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1985, Ser. No. 726,192

Int. Cl.⁴ B05B *1/00*

U.S. Cl. 156—357 **5 Claims**



1. A system for applying a stripe of liquid adhesive to a plurality of sheets advanced along a path leading past an adhesive applicator, the system comprising:

a pneumatic proximity switch located along the path adjacent the applicator, the switch having (1) an air inlet port for receiving air under pressure, (2) an air outlet port communicating with the inlet port and located adjacent the path for directing air under pressure from the inlet port into the path and (3) a control port communicating with the outlet port so that when a sheet is in the path over the outlet port a back pressure is created at the control port;

the applicator having (1) a nozzle located above the sheet path through which adhesive is applied to a sheet, (2) an inlet port for receiving liquid adhesive under pressure from an adhesive supply and (3) a pneumatically controlled valve operable when actuated by air under pressure to allow the flow of adhesive from the inlet port to the nozzle and thus to a sheet beneath the nozzle; and

a pressure amplifier having an inlet port for receiving air under pressure from a source and an outlet port coupled to the applicator valve, the amplifier having a control port coupled to the control port of the proximity switch, and the amplifier being responsive to an increase in back pressure at the control port of the proximity switch to provide air under pressure from the source to the applicator valve

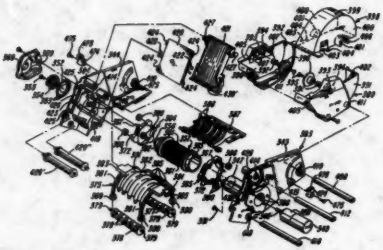
to thereby actuate the valve so that adhesive is applied to a sheet driven along the path and beneath the applicator.

4,614,561

HAND-HELD LABELER

John D. Mistyurik, Tipp City, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 582,338, Feb. 28, 1984, Pat. No. 4,544,434.
This application Mar. 25, 1985, Ser. No. 715,859
Int. Cl.[4] B65C *11/02*
U.S. Cl. 156—384 4 Claims



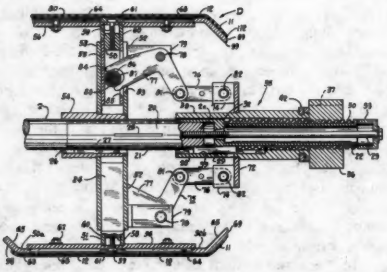
1. A hand-held labeler adapted to print and apply pressure sensitive labels releaseably secured to a carrier web, comprising: a housing having a handle, means for printing on labels, means for delaminating printed labels, means for applying printed labels, means for advancing the carrier web, wherein the advancing means includes a rotatably mounted feed wheel having a web-engageable tooth, a rotatably mounted roll for holding the web against the feed wheel, wherein the roll has a groove in line with the tooth so that the tooth misses the roll, and a guide member extending into the groove for guiding the carrier web away from the feed wheel.

4,614,562

TIRES BUILDING MACHINE WITH RIGID RADIALLY EXPANSIBLE DRUM

Robert F. Jones, Westfield Center, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 13, 1984, Ser. No. 639,763
Int. Cl.[4] B29D *30/34, 30/26*
U.S. Cl. 156—420 7 Claims



1. In a tire building machine designed for mass production of green bias tires by the flat-band process having a motor-driven cantilever shaft; an externally cylindrical open-ended tire building drum mounted on said shaft; bead setting means, ply turn-up means and tread stitching means engageable with said drum; and automatic control means associated with said bead setting means, said turn-up means and said tread stitching means for effecting a predetermined sequence of operations during building of a green tire; the improvement wherein

(a) said tire building drum has an expansible open-ended circumferentially discontinuous cylindrical shell formed of the upper surfaces of each of a series of closely spaced axially elongated rigid segments with rigid beveled shoulders which extend circumferentially discontinuously and has an annular sheath of elastic material sheathing said shell to provide an elastomeric cylindrical building surface, said sheath extending the full length of the drum and having thickened annular portions conforming to the drum's beveled shoulders;

(b) said segments are mounted on a central supporting means for simultaneous radial outward movement to increase the drum diameter at least 35 percent while maintaining said upper surfaces as a discontinuous cylindrical surface and to extend axially outwardly from said supporting means in cantilever fashion with said rigid beveled shoulders extending axially outwardly at opposite ends of the drum, each segment having an inclined end portion providing an integral flange at one of the drum shoulders upon which the ends of the carcass are coextensively laid by said radial outward movement;

(c) actuating means are provided for causing each segment to move radially in unison with the other segments during drum rotation to maintain the cylindrical shape of the shell and conformation of said sheath to the shape of said rigid beveled shoulders;

(d) each bead setting means moves a wire bead ring against the carcass ply material at the end of the drum and places the bead ring against the ends of the segments radially inwardly of said rigid beveled shoulders; and,

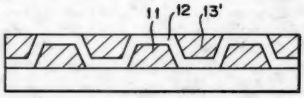
(e) said automatic control means causes the ply turn-up means to turn the outer portions of the tire carcass material up over the bead rings and to press said portions against the carcass material on the beveled shoulders.

4,614,563

PROCESS FOR PRODUCING MULTILAYER CONDUCTOR STRUCTURE

Takashi Kubo, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 29, 1985, Ser. No. 760,034
Claims priority, application Japan, Aug. 2, 1984, 59-163620
Int. Cl.[4] C23F *1/02;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 6 Claims



1. A process for producing a multilayer conductor structure having at least two conductor patterns in layers and a smooth surface over the upper pattern, which comprises the steps of:

(1) forming a first conductor pattern on a substrate or on a layer provided on the substrate;

(2) providing a conductor layer over an intermediate insulation layer formed on said first conductor pattern;

(3) providing a resin layer on said conductor layer to form a smooth surface thereon; and

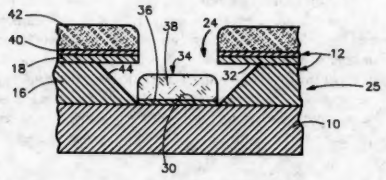
(4) etching said resin layer and a part of said conductor layer provided on the first conductor pattern to form a second conductor pattern having a smooth surface thereon.

4,614,564

PROCESS FOR SELECTIVELY PATTERNING EPITAXIAL FILM GROWTH ON A SEMICONDUCTOR SUBSTRATE

Peter Sheldon, Golden, and Russell E. Hayes, Boulder, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 4, 1984, Ser. No. 678,202
Int. Cl.[4] C03B *23/00;* **H01L** *21/205, 21/365, 21/306*
U.S. Cl. 156—657 **19 Claims**



1. A process for selectively patterning epitaxial film growth on a semiconductor substrate comprising:

forming a masking member on the surface of said substrate, said masking member having at least two layers including a first layer disposed on said substrate and a second layer covering said first layer;

opening a window in a selected portion of said second layer by removing said portion to expose the first layer thereunder;

subjecting said first layer to an etchant introduced through said window to dissolve said first layer a sufficient amount to expose the substrate surface directly beneath said window, said first layer adapted to preferentially dissolve at a substantially greater rate than said second layer so as to create an overhanging ledge portion in said second layer by undercutting the edges thereof adjacent to said window;

depositing said epitaxial film on said exposed substrate surface directly beneath said window; and

introducing an etchant through said window to dissolve the remainder of said first layer so as to lift off the second layer and materials deposited thereon to fully expose the balance of said substrate surface.

4,614,565

METHOD FOR EDDY CURRENT HEATING A ROLL IN A PAPER MACHINE

Jaakko Riihinen, Jyväskylä , Finland, assignor to Valmet OY, Finland

Filed Dec. 12, 1983, Ser. No. 560,394
Claims priority, application Finland, Dec. 14, 1982, 824281
Int. Cl.[4] H05B *6/14*
U.S. Cl. 162—206 **7 Claims**

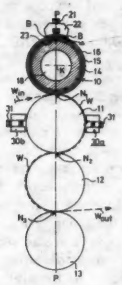
1. A method for heating a roll in the production of paper, which comprises applying eddy current heating to only an outer surface layer of the roll, and exclusively applying the eddy current heating from outside the roll, to inductively heat the roll, comprising the steps of:

providing the roll with an outer surface formed of ferromagnetic material,

disposing the outer layer of the roll about a heat insulation layer of magnetically non-conductive material, to confine the eddy current heating to substantially within the outer layer from exclusively outside the roll,

disposing means for applying the eddy current heating outside the roll proximate to the outer surface layer thereof,

conducting magnetizing current through the means to generate magnetic flux from the means to pass only through the outer surface layer, and



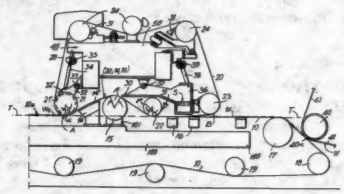
adjusting at least one of intensity and frequency of the magnetizing current, to control temperature profile along an axial direction of the roll.

4,614,566

WEB-FORMING SECTION IN A PAPER MACHINE

Martti Koponen; Martti Pullinen; Erkki Koski, and Jouni Koskimies, all of Jyväskylä , Finland, assignors to Valmet Oy, Finland

Continuation-in-part of Ser. No. 430,231, Sep. 29, 1982, abandoned. This application Jan. 31, 1984, Ser. No. 575,543
Claims priority, application Finland, Mar. 2, 1982, 820742
Int. Cl.[4] D21F *1/00, 1/40, 1/80, 3/04*
U.S. Cl. 162—301 **38 Claims**



1. In a paper machine, a web-forming section comprising:

a lower wire loop having an initial, substantially horizontal and planar lower wire run constituting an initial substantially horizontal single-wire dewatering zone of the web-forming section in which web-forming stock is initially dewatered or predrained in a downward direction through said lower wire for initially forming a fiber network such that retention of fillers and fines is promoted as the web is subsequently dewatered in a two-wire dewatering zone of the web-forming section;

an upper wire loop situated over said lower wire loop having a run which forms a joint wire run with a subsequent run of said lower wire loop following said initial substantially horizontal and planar lower wire run, said joint run constituting a two-wire dewatering zone of the web-forming section within which dewatering takes place predominantly upwardly through said upper wire;

first roll means for initially dewatering the web predominantly upwardly through said upper wire immediately upon the web reaching said joint run, said first roll means comprising a first dewatering forming roll having an open face situated inside the upper wire loop, said joint wire run beginning on said first dewatering forming roll where said joint wire run of said two-wire dewatering zone in curved upwardly over a sector of said first dewatering forming roll for bidirectionally dewatering the initially down-

wardly dewatered web which is carried to said first dewatering forming roll from said initial single-wire dewatering zone both upwardly through said upper wire and downwardly through said lower wire, said upward dewatering through said upper wire on said first forming roll being greater than said downward dewatering through said lower wire;

a forming shoe situated inside the lower wire loop closely after said first open dewatering forming roll in the direction of web travel, said forming shoe having a curved deck having one or more centers of curvature situated on the side of the lower wire loop, said joint wire run of said two-wire dewatering zone being guided over a sector of said deck to curve downwardly for dewatering the web at least upwardly through said upper wire;

second roll means for dewatering the web at least upwardly through said upper wire, said second roll means comprising a second forming roll situated inside the lower wire loop closely after said forming shoe in the direction of web travel, said joint wire run of said two-wire dewatering zone being guided over a sector of said second forming roll to curve downwardly for dewatering the web at least upwardly through said upper wire;

said run of said upper wire loop which forms said joint run being situated entirely in or above the plane of said initial substantially horizontal and planar lower wire run;

wherein said joint run of said upper and lower wires extends through the range defined by said first and second forming rolls and said forming shoe situated therebetween, said joint run being arranged such that after the initial downward dewatering occurs in the single-wire dewatering zone through the lower wire, dewatering takes place within the two wire dewatering zone asymmetrically and predominantly upwardly through said upper wire, and whereupon dewatering pressure is further increased within the range of said second forming roll with dewatering continuing to take place through the upper wire to substantially complete the asymmetric dewatering of the web in the two-wire dewatering zone.

4,614,567

METHOD AND APPARATUS FOR SELECTIVE AFTER-QUENCHING OF COKE ON A COKE BENCH

Dieter Stahlherm, Recklinghausen; Reimer Haack, Haltern; Wilhelm Stewen, Dortmund, and Helmut Lukaszewicz, Bottrop, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

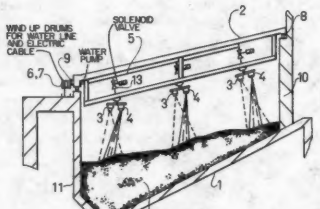
PCT No. PCT/EP84/00325, § 371 Date Jun. 12, 1985, § 102(e) Date Jun. 12, 1985, PCT Pub. No. WO85/01953, PCT Pub. Date May 9, 1985

PCT Filed Oct. 24, 1984, Ser. No. 752,183

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1983, 3339160

Int. Cl.[4] C10B *39/06;* **G01J** *5/00*

U.S. Cl. 201—1 **20 Claims**



1. Method for selective after-quenching of prequenched hot coke during the time it is lying on a coke bench for final cooling prior to being discharged onto a coke bench draw-off belt or the like, and which has been previous produced in a coke oven and thereafter prequenched prior to reaching the coke bench for such final cooling, which comprising the steps of

(a) sensing and recording the temperature of such prequenched hot coke lying on the coke bench with reference to a desired temperature value, such that the sensing and recording are substantially continuously carried out over the entire area of the hot coke on the coke bench for detecting locally occurring individual red hot pockets in the hot coke having a temperature above said desired value,

(b) upon each such detection automatically after-quenching with a water spray selectively only such detected locally occurring individual red hot pocket in controlled manner in dependence upon the sensed and recorded temperature and only for the minimum time of spraying sufficient for decreasing the temperature of such red hot pocket to below said desired value, wherein the individual red hot pockets of coke are selectively detected and quenched by respective at least one temperature sensor and at least one quench nozzle, both movable over the hot coke.

4,614,568

HIGH-SPEED SILVER PLATING AND BATHS THEREFOR

Toshikazu Okubo; Yasuo Mori, and Shunichi Kasai, all of Toda, Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

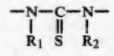
Filed Jun. 4, 1984, Ser. No. 617,215

Claims priority, application Japan, Jun. 14, 1983, 58-104937; Mar. 13, 1984, 59-46591

Int. Cl.[4] C25D *3/46, 5/34*

U.S. Cl. 204—29 **10 Claims**

1. A high-speed silver plating solution for electro-plating silver on a substrate which consists of a less-noble metal, such as copper, copper alloy, copper-plated base metal, iron, ferro-alloy, nickel, or nickel alloy, said plating solution comprising silver salt in the form of an alkali metal silver cyanide, a free cyanide concentration of not more than 10 g/l, the solution containing a buffering agent so that the pH of the solution is adjusted within the range of 7.5 to 9.0, and a cyclic compound whose ring includes a thioureylene radical



(in which R_1 and R_2 are hydrogen or an alkyl or aryl group each) in a sufficient amount to prevent silver deposition by displacement reaction, whereby the silver deposition on the substrate is avoided.

10. An electrolytic plating process for plating silver on a surface of metal less noble than silver comprising treating the metal surface with a compound selected from the group consisting of 2-imidazolidine thione, 1-phenyl-2-tetrazoline-5-thione, and derivatives thereof and plating the metal surface in an electrolytic plating solution containing an alkali metal silver cyanide.

4,614,569

MOLTEN SALT ELECTROWINNING METHOD, ANODE AND MANUFACTURE THEREOF

Jean J. Duruz, Geneva; Jean-Pierre Derivaz, Petit Saconnex; Pierre-Etienne Debely, and Iudita L. Adorian, both of Geneva, all of Switzerland, assignors to Eltech Systems Corporation, Boca Raton, Fla.

PCT No. PCT/EP84/00010, § 371 Date Aug. 20, 1984, § 102(e) Date Aug. 20, 1984, PCT Pub. No. WO84/02724, PCT Pub. Date Jul. 19, 1984

PCT Filed Jan. 13, 1984, Ser. No. 644,726

Claims priority, application United Kingdom, Jan. 14, 1983, 8301001

Int. Cl.[4] C25C *3/00, 3/06, 3/12, 3/18*

U.S. Cl. 204—67 32 Claims

7. A method of electrowinning a metal by the electrolysis of a melt containing dissolved species of the metal to be won using an anode immersed in the melt, characterized in that the anode has as its operative surface an anodically active and electronically conductive coating of at least one fluorine-containing oxycompound of cerium.

8. The method of claim 7 for the electrowinning of aluminium from a cryolite-based melt containing alumina.

4,614,570

SINGLE-STAGE ELECTROCHEMICAL IMAGE-FORMING PROCESS FOR REPRODUCTION LAYERS

Engelbert Pliefke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 6, 1985, Ser. No. 730,632

Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3416867

Int. Cl.[4] C25F *3/14*

U.S. Cl. 204—129.65 14 Claims

1. A process for electrochemically forming an image comprised of image and non-image areas on a multi-layered, sheet-like material comprising at least one hydrophilic, electrically conductive layer and a nonirradiated, electrically nonconductive reproduction layer provided on said conductive layer, said process comprising the steps of:

(a) contacting at least a portion of said nonirradiated, electrically nonconductive reproduction layer with an aqueous electrolyte, solution capable of conducting an electrical current, said solution having a pH in the range from about 2.0 to 10.0 and containing at least one salt of an organic or inorganic acid in a concentration from 0.1 weight percent up to the saturation limit of said salt in said aqueous electrolyte solution; and then,

(b) between an electrode and said hydrophilic conductive layer, passing electrical current in a predetermined configuration through said aqueous electrolyte solution and said reproduction layer, respectively, in an amount sufficient to dissolve selected portions of said reproduction layer which correspond to non-image areas of said image,

wherein step (b) is carried out at a temperature from about 20° C. to 70° C. with direct or alternating current of a density between about 1 and 100 A/dm2.

4,614,571

PROCESS FOR ELECTROCHEMICALLY GRAINING STEEL PLATES USED AS OFFSET PRINTING PLATE SUPPORTS, AND AN ELECTROLYTE SOLUTION SUITABLE FOR THE PROCESS

Engelbert Pliefke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 751,522

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1984, 3424529

Int. Cl.[4] C25F *3/06*

U.S. Cl. 204—129.75 18 Claims

1. A process for the electrochemical graining of steel-based printing plate supports in an aqueous electrolyte containing chloride ions, comprising the step of electrochemically graining a steel-based printing plate support in an electrolyte comprising from about 1 to 100 g/l of hydrochloric acid and from about 1 to 50 g/l of at least one wetting agent, corrosion inhibitor, wherein said electrochemical graining step is performed at a current density between about 3 and 130 A/dm^2 and a temperature of between about 20° and 60° C.

4,614,572

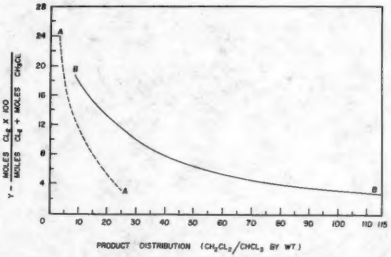
LIQUID PHASE CHLORINATION OF CHLORINATED METHANES

Michael T. Holbrook, Baton Rouge, La., and Thomas E. Morris, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 8, 1985, Ser. No. 752,696

Int. Cl.[4] B01J *19/12;* C07C *17/00*

U.S. Cl. 204—157.95 5 Claims



1. A process for the production of methylene chloride by the liquid-phase chlorination of methyl chloride, which process comprises the steps of:

(a) forming an uninitiated liquid-phase reaction mixture containing chlorine and methyl chloride, the mole ratio of chlorine to methyl chloride lying between about 0.047:1 and about 0.079:1;

(b) holding the reaction mixture in a closed vessel under a pressure within the range of from about 100 to about 800 psig, and at a temperature within the range of from 40° C. to about 175° C. during the reaction period; and

(c) recovering the methylene chloride formed.

4,614,573

METHOD FOR PRODUCING AN OZONE GAS AND APPARATUS FOR PRODUCING THE SAME

Senichi Masuda, 3-2-1-415, Nishigahara, Kita-ku, Tokyo, Japan

Filed May 3, 1985, Ser. No. 730,754

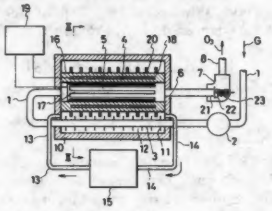
Claims priority, application Japan, May 9, 1984, 59-92464

Int. Cl.[4] C01B *13/10*

U.S. Cl. 204—176 18 Claims

1. A method for producing an ozone gas, characterized in that ozonization is effected within an electric field device comprising a cylindrical dielectric body formed from an alumina ceramic, said cylindrical dielectric body being provided with a cylindrical induction electrode disposed therein and a plurality of linear discharge electrodes disposed in a parallel

array on the inner surface of said cylindrical dielectric body to generate a surface corona discharge region along the inner surface of the cylindrical dielectric body, while a density of a



gas to be ozonized in said surface corona discharge region of said cylindrical dielectric body is kept higher than the density of said gas to be ozonized in the standard state.

4,614,574

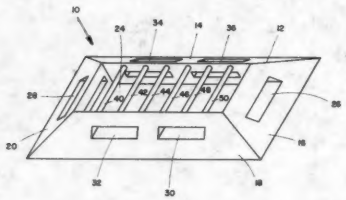
IMPRESSED CURRENT ANODE BED

Roland E. Bussell, Greenwell Springs, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 6, 1985, Ser. No. 805,670

Int. Cl.[4] C23F *13/00*

U.S. Cl. 204—196 **19 Claims**



1. An impressed current anode bed which comprises:

(a) a housing which forms a truncated four-sided pyramid having a rectangular base, said housing having a cavity extending from its apex to its base;

(b) at least one anode mounted to said housing and located within said cavity, said at least one anode being connected to a source of DC electrical current; and

(c) at least one channel extending from one exterior side to an opposite exterior side of said housing and through said cavity, said channel being closer to said base than said at least one anode.

4,614,575

POLYMERIC HYDROGEL-CONTAINING GAS DIFFUSION ELECTRODES AND METHODS OF USING THE SAME IN ELECTROCHEMICAL SYSTEMS

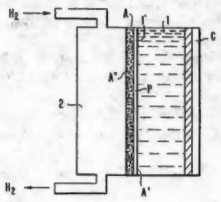
Walter Juda, Lexington, and Amiram B. Ilan, Newton, both of Mass., assignors to Prototech Company, Newton Highlands, Mass.

Filed Nov. 19, 1984, Ser. No. 673,041

Int. Cl.[4] H01M *4/86;* C25B *11/03*

U.S. Cl. 204—265 **15 Claims**

1. A catalytic gas-diffusion structure comprising electrode for use in an electrolytic cell having, as an integral part of a portion thereof, a substantially non-ionic, aqueous, polymeric gel, said gel being capable of preventing gas-percolation through said electrode and of restricting electrolyte access



thereto to diffusional and electrochemical transport, and other portions of the electrode providing access to gas flow.

4,614,576

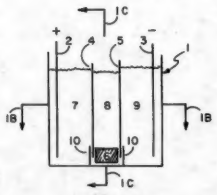
MICROLITER SCALE ELECTRODIALYSIS APPARATUS

Jonathan M. Goldstein, Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Oct. 22, 1985, Ser. No. 790,275

Int. Cl.[4] B01D *13/02;* B01K *5/00;* G01N *27/28*

U.S. Cl. 204—299 R **11 Claims**



1. An electrodialysis apparatus comprising:

a vessel fabricated from electrically insulating material and containing anode and cathode means spaced apart horizontally;

at least two removable unit cells electrically in parallel between said anode means and said cathode means, each of said unit cells comprising at least two parallel spaced apart electrolytically conducting hydraulic barriers oriented substantially vertically and substantially parallel to said anode and cathode means, said barriers thereby forming at least one interior liquid holding cavity in each unit cell, at least one of said barriers in any adjacent pair in each unit cell being ion-selective; and means for inhibiting the bypass of electrolytic current around said unit cells when said vessel is filled with electrolyte solution to a level below the top of each said unit cell and a direct electric current is applied between said anode means and said cathode means.

4,614,577

APPARATUS FOR UREA ANALYSIS

Konrad Mund, Uttenreuth; Günter Luft, Lauf, and Ulrich Gebhardt, Langensendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 399,246, Jul. 19, 1982, Pat. No. 4,505,784. This application Dec. 27, 1984, Ser. No. 686,837

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129988

Int. Cl.[4] G01N *27/46*

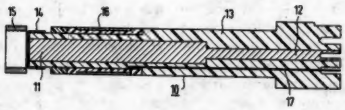
U.S. Cl. 204—415 **8 Claims**

1. A urea sensor comprising:

(a) a measuring electrode,

(b) a counter electrode and a reference electrode,

(c) a diaphragm with a diffusion coefficient for urea of less than 10^{-7} cm^2 s^{-1} covering the measuring electrode, whereby during use said diaphram will be disposed between said measuring electrode and a urea containing liquid, said diaphragm having both hydrophobic and hydrophilic properties and having a degree of hydrophilization, H, which is in the interval of from about 1:15 to about 1:100.



4,614,578

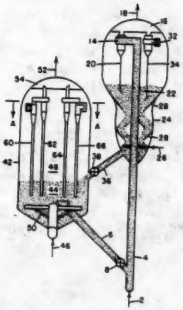
OCTANE AND TOTAL YIELD IMPROVEMENT IN CATALYTIC CRACKING

Arthur W. Chester, Cherry Hill; William E. Cormier, Jr., Clarksboro, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 430,198, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 301,851, Sep. 14, 1981, Pat. No. 4,368,114, which is a continuation-in-part of Ser. No. 100,585, Dec. 5, 1979, Pat. No. 4,309,279, which is a continuation-in-part of Ser. No. 50,588, Jun. 21, 1979, abandoned. This application Jun. 24, 1985, Ser. No. 747,698 The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.[4] C10G *11/05*

U.S. Cl. 208—120 **22 Claims**



1. A process for catalytically cracking a hydrocarbonaceous feedstock comprising the step of contacting the feedstock in a reaction zone under catalytic cracking conditions in the absence of added hydrogen with a catalyst composition comprising a zeolite component having a Constraint Index of about 1 to 12 and a mole ratio of oxides of SiO_2:Al_2O_3 greater than about 500 and a large pore size crystalline aluminosilicate cracking component wherein the percent of said crystalline zeolite component to said large pore size crystalline aluminosilicate containing catalyst composition is about 0.05 to 1.0 wt. %, and wherein said zeolite component is a separate additive catalyst.

4,614,579

HYDRAULICALLY OPERATED DIFFERENT DENSITY PARTICLE SORTING PROCESS

Thor Dorph, 119 South Blvd., San Mateo, Calif. 94402

Filed Oct. 31, 1983, Ser. No. 547,237

Int. Cl.[4] B07B *9/00*

U.S. Cl. 209—18 **2 Claims**

1. A method of particle sorting in a hydraulically operated apparatus, said apparatus comprising;

an elongated tubular conduit inclined upward in a direction along its longitudinal axis;

a main lower fluid inlet connected to a lower part of the conduit;

a main upper fluid outlet connected to an upper part of the conduit;

a mixed particle feed inlet, connected to the tubular conduit at an intermediate longitudinal location between the main lower fluid inlet and main upper fluid outlet; and,

a side-gutter low point line, extending axially along the bottom of the inclined conduit, and that is formed by a first flat upward sloped upstanding conduit side-wall that forms vertexes, along the bottom of the conduit, with a second flat conduit side-wall surface which is tilted downwards at an angle in a second direction that is transversely disposed relative to the inclined direction of the conduit;

said method comprising the stpes of:

(a) providing an adjusted upward fluid flow through the inclined conduit which establishes inherently higher midstream fluid flow velocity forces and inherently lower fluid flow velocity forces at and adjacent to the conduit boundary wall surfaces;

(b) introducing a mixture of different small sized different density mineral particles into the inclined conduit through the mixed particle feed inlet;

(c) adjusting the incline of the conduit in conjunction with the upward fluid flow through the conduit to allow all of the mineral particles for processing to drop rapidly out of the fluid flow suspension and to be maintained in a predominantly precipitated condition;

(d) adjusting the incline of the conduit in conjunction with the fluid flow through the conduit to cause the precipitated mineral particles to form two superincumbent strata, which strata move, or tend to move, in opposite longitudinal directions relative to each other, upon and along the entire bottom surface length of the conduit, the overlying stratum particles tending to move upward in the conduit, and the underlying particle stratum tending to move downward and converging into the side-gutter low point line in the inclined conduit;

(e) sorting the mineral particles according to different particle density occurring spontaneously by interaction of particles colliding while tending to move in opposite longitudinal directions within the strata, causing the heavy mineral particles to sink into and to accumulate in increasing proportions in the lowermost locations along the side gutter low-point line in the downward-moving underlying particle stratum, while causing the lighter mineral particles to float and accumulate in increasing proportions in the uppermost and outspread locations in the upward-moving overlying particle stratum;

(f) discharging heavy mineral particles from the lower terminus of the conduit in which the accumulated and converged heavy mineral particles continuously descend against the lower fluid flow velocity forces along the side-gutter low point line, and through which similar forces emanating from the lower main fluid inlet; and

(g) discharging the light mineral particles through the upper main fluid outlet at the upper terminus of the conduit after the light mineral particles that have accumulated in the uppermost and more outspread locations in the overlying particle stratum are thereat agitated and moved in the upward direction by the higher midstream fluid flow velocity forces in the inclined conduit.

2. A method of particle sorting in a hydraulically operated apparatus, said apparatus comprising:

an elongated tubular conduit inclined upward in a direction along its longitudinal axis;

a main lower fluid inlet connected to a lower part of the conduit;

a main upper fluid outlet connected to an upper part of the conduit;

a mixed particle feed inlet, connected to the tubular conduit at an intermediate longitudinal location between the main lower fluid inlet and main upper fluid outlet; and,

at least one auxiliary fluid slot inlets, located in an intermediate longitudinal location between the main lower fluid inlet and the mixed particle feed inlet; and,

a side-gutter low point line, extending axially along the bottom of the inclined conduit, and that is formed by a first flat upward sloped upstanding conduit side-wall that forms vertexes, along the bottom of the conduit with a second flat conduit side-wall surface which is tilted downwards at an angle in a second direction that is transversely disposed relative to the inclined direction of the conduit;

said method comprising the steps of:

(a) providing an adjusted fluid flow through the inclined conduit which establishes inherently higher midstream fluid flow velocity forces and inherently lower fluid flow velocity forces at and adjacent to the conduit boundary wall surfaces;

(b) introducing a mixture of different small sized different density mineral particles into the inclined conduit through the mixed particle feed inlet;

(c) adjusting the incline of the conduit in conjunction with the fluid flow through the conduit to allow all of the mineral particles for processing to drop rapidly out of fluid flow suspension and to be maintained in a predominantly precipitated condition; and

(d) adjusting the incline of the conduit in conjunction with the fluid flow through the conduit to cause the precipitated mineral particles to form two superincumbent strata, which strata move, or tend to move, in opposite longitudinal directions relative to each other, upon and along the entire bottom surface length of the conduit, the overlying stratum particles tending to move upward in the conduit and the underlying particle stratum tending to move downward and converging into the side-gutter low point line in the inclined conduit;

(e) sorting the mineral particles according to different particle density by the spontaneous interaction of particles colliding while tending to move in opposite longitudinal directions within the strata, causing the heavy mineral particles to sink into and to accumulate in increasing proportions in the lowermost locations along the side gutter low-point line in the downward-moving underlying particle stratum, while causing the lighter mineral particles to float and accumulate in increasing proportions in the uppermost and outspread locations in the upward-moving overlying particle stratum;

(f) providing particle agitation forces by adjusting the fluid inflow through at least one auxiliary fluid slot inlet to replicate the particle agitation that is established at the main lower fluid inlet so that previously sorted and segregated downward-moving heavy mineral particles continue moving downward and emanate from the lower fluid flow velocity agitating forces at the auxiliary fluid slot inlet and reform into the lower stratum so that the lower stratum contains relatively fewer entrained light mineral particles and so that the lower stratum is subsequently subjected to further reprocessing which includes either another upstream-located auxilary fluid slot inlet or the main lower fluid inlet while previously sorted and segregated light mineral particles moving downwards into the vicinity of the at least one auxiliary fluid slot inlet are more strongly agitated by the higher midstream velocity forces of the inlet flow and are perpendicularly propelled into the higher velocity conduit midstream fluid flow forces which transport the light mineral particles further upward for reprocessing in the inclined conduit;

(g) discharging heavy mineral particles from the lower terminus of the conduit in which the accumulated and converged heavy mineral particles continuously descend against the lower flow velocity forces along the side-gutter low point line, and through which similar forces emanate from the lower main fluid inlet; and

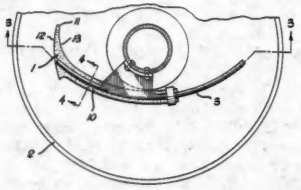
(h) discharging the light mineral particles through the upper main fluid outlet at the upper terminus of the conduit after the light mineral particles that have accumulated in the uppermost and more outspread locations in the overlying particle stratum are thereat agitated and moved in the upward direction by the higher midstream fluid flow velocity forces in the inclined conduit.

4,614,580

SPIRAL SEPARATOR

Philip J. Giffard, Nerang, Australia, assignor to Mineral Deposits Limited, Australia

Filed Dec. 21, 1984, Ser. No. 684,869
Claims priority, application Australia, Jan. 9, 1984, PG3112
Int. Cl.[4] B03B *5/52*
U.S. Cl. 209—459 **12 Claims**



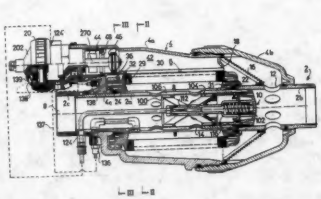
1. A splitter assembly for dividing a flow of particles or slurry descending a sluice of a spiral separator, said assembly comprising a splitter blade having an upstream working edge, and means supported by said spiral separator above the sluice floor for mounting the blade with a lower end of the working edge in contact with and movable across the width of the sluice floor of the separator in which the assembly is located, said mounting means for adjustably changing the position of contact of said working edge by translational movement along a path extending between a radially outer and a radially inner part of the sluice floor to vary the width of the flow being divided by the splitter assembly.

4,614,581

BACKWASHABLE FILTER

Mordeki Drori, 89 Zahal Street, Kiron, Israel

Filed Apr. 11, 1984, Ser. No. 599,261
Claims priority, application Israel, Apr. 14, 1983, 68403
Int. Cl.[4] B01D *41/00*
U.S. Cl. 210—108 **25 Claims**



1. A backwashable filter including a housing having an inlet connectable to an upstream fluid pipe and an outlet connect-

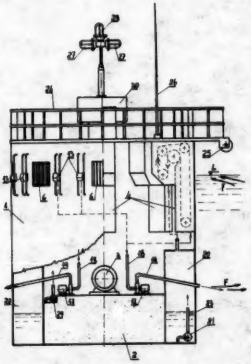
able to a downstream fluid pipe, a filter body having an upstream surface facing the housing inlet, a backwash nozzle within the housing and having a nozzle inlet disposed adjacent to the upstream surface of the filter body, and a control device for sensing the pressure drop across the filter body and effective, upon sensing a pressure drop of a predetermined magnitude, to initiate a backwash operation by connecting the backwash nozzle to the atmosphere and effecting relative rotary movement between the filter body and the backwash nozzle; characterized in that said control device includes further means effective, upon sensing a pressure drop across the filter body of a second predetermined magnitude, higher than the magnitude of said first-mentioned pressure drop, to automatically terminate the backwash operation.

4,614,582

AUTOMATIC AND AUTONOMOUS FLOATING PURIFIER WITH ROTARY BELT SEPARATION AND EXTERNAL RADIAL CIRCULATION

Antonio Campitelli, Genova, Italy, assignor to Sea Dupar S.R.L., Italy

Filed Apr. 17, 1985, Ser. No. 724,018
Claims priority, application Italy, Apr. 17, 1984, 12495 A/84
Int. Cl.[4] F02B *15/04*
U.S. Cl. 210—242.3 **5 Claims**



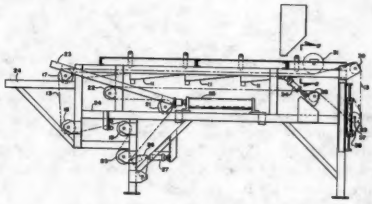
1. A floating water-purifying system for purifying polluted water, which comprises a water-tight cylindrical housing ballasted to float in the polluted water with the axis thereof positioned vertically; a plurality of compartments radially disposed within said housing, each comprising first chamber means for storing purified water, second chamber means for collecting pollutants, outlet means in said first chamber means for discharging purified water therefrom, outlet means in said second chamber means for discharging recovered pollutants therefrom, inlet means on said housing communicating with polluted water outside said housing for admitting polluted water into said first chamber means, pollution removal means comprising endless belt means extending between said chamber means and having a portion thereof passing into water in said first chamber means, said belt means being operable to remove and carry pollutants out of water in said first chamber means to said second chamber means, and means for discharging pollutants carried by said belt means into said second chamber means; a plurality of floating water-collection means for delivering polluted water into said housing carried on the outside of said housing and arranged to float in the polluted water; and a plurality of circulation pumps having an intake and an outlet, said circulation pump intakes being operatively connected to groups of said water-collection means and groups of outlet means of said first chamber means and said circulation pump outlets being radially disposed about said housing below the surface of said polluted water, said circulation pumps including means for discharging water radially outwards of the housing below the surface of the polluted water to create a toroidal circulation converging on the surface of the polluted water toward the housing sufficient for pollutants from a wide area around the housing to be directed toward and into the inlet means of the first chamber means, said circulation pumps further including means for providing selective operation of some or all of the circulation pumps for enabling propulsion and steering of the housing.

4,614,583

HORIZONTAL BELT FILTER WITH INCREMENTAL BELT ADVANCE

Ralph O. Hawkes, 4482 Zarahemla Dr., Salt Lake City, Utah 84124

Filed Mar. 18, 1985, Ser. No. 712,627
Int. Cl.[4] B01D *33/04*
U.S. Cl. 210—400 **4 Claims**



1. A belt filter comprising an elongated filter section which includes means for the selective application and discontinuation of vacuum thereto and which has an inlet end and a discharge end; an endless belt filter medium trained to pass over said filter section thence from said discharge end through a return run back to said inlet end; a plurality of parallel idler rollers in the path of said return run over which said belt is trained; all of said rollers being mounted solely for idling; said rollers including serially a first indexing roller, a first fixed position roller, a second indexing roller and a second fixed position roller; a rigid elongated carriage angled to extend from adjacent said discharge end to terminate below said filter section between said discharge end and inlet end; said carriage being mounted for substantially horizontal reciprocal movement; bearing means mounting said indexing rollers for rotation one at each of the opposite ends of said carriage; means for effecting reciprocation of said carriage to effect simultaneous reciprocation of both of said indexing rollers; a belt brake comprising means to grip said endless belt at a location between said first and second indexing rollers to block movement of said belt at said location; valved conduit means to apply vacuum to said filter section for filtration and to discontinue vacuum for belt movement; and means operable while vacuum to said filter section is discontinued to cause said brake to grip said belt; and means to reciprocate said carriage to move said first indexing roller to and from said discharge end.

4,614,584

DISTRIBUTOR BOX FOR SEPTIC TANK SYSTEMS

Mark B. Di Duca, 1590 Young Ave., Paradise, Calif. 95969

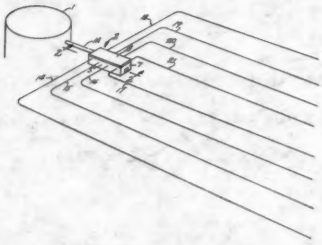
Filed Feb. 11, 1985, Ser. No. 700,808
Int. Cl.[4] B01D *35/30*
U.S. Cl. 210—422 **3 Claims**

1. A distributor box with settling chamber for a septic tank system having a septic tank and a multitude of drain lines, said distributor box serving to apportion a septic tank discharge flow to the drain lines, said distributor box comprising,

a box structure including side, end and bottom walls, a removable closure, said side walls each having a series of outlet openings at a uniform distance above the box struc-

ture bottom wall, to each serve one of said drain lines, said side and end walls having shoulders,

a screen including a frame in horizontal rested placement on said shoulders in a plane above said outlet openings and below a plane containing a box structure inlet opening whereby effluent discharged from said inlet opening will be deposited on said screen to remove solids above a



predetermined size, said screen extending substantially the length of said box structure and serving to disperse effluent along the box structure for uniform distribution to the series of outlet openings, and

a settling chamber extending the length of said box structure with the upper limit of the chamber being immediately below said outlet openings whereby certain solids are prevented from entry into the drain lines.

4,614,585

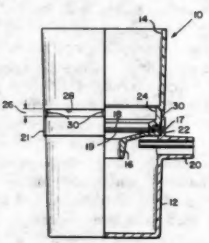
FRANGIBLE BONDED DISPOSABLE FILTRATION UNIT WITH RECOVERABLE FILTER

Ravinder C. Mehra, Fairport; Robert G. Relyea, Canandaigua, and Peter K. Baird, Fairport, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Continuation of Ser. No. 459,712, Jan. 21, 1983, abandoned, which is a continuation of Ser. No. 238,152, Mar. 2, 1981, abandoned. This application Sep. 12, 1984, Ser. No. 649,974

Int. Cl.[4] B01D *31/00*

U.S. Cl. 210—433.2 **5 Claims**



1. A disposable filtration unit having a recoverable filter membrane comprising:

(a) a hollow cylindrical receptacle for receiving a filtrate, said receptacle having an upper rim portion defining an internal shoulder;

(b) a support plate fixed to said shoulder, said plate having at least one opening therethrough;

(c) a filter membrane removably disposed upon said support plate over said at least one opening;

(d) an annular gasket overlying said filter membrane and support plate;

(e) a hollow cylindrical shell for receiving a liquid to be filtered, said shell having an outer periphery and a lower neck portion extending into the rim portion of said receptacle, a lower end face of said neck portion pressing said gasket into sealing engagement with said support plate and filter membrane, said shell being removably attached to said receptacle by discrete frangible bonds located at spaced intervals about the outer periphery of said shell and said upper rim portion of said receptacle and being integrally formed between said outer periphery of said shell and an upper end of said rim portion of said receptacle, said bonds being the sole points of attachment between the shell and the receptacle.

4,614,586

SEMIPERMEABLE POLYMERIC FILM MEMBRANE

Hitoshi Masuda, Abiko; Koichi Takada, Kyoto, and Yoshiro Nakata, Ibaraki, all of Japan, assignors to Director-General of Agency of Industrial Science & Technology, Tokyo and Sanyo Kasei Kogyo Kabushiki Kaisha, Kyoto, both of, Japan

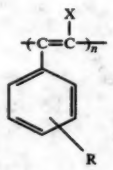
Filed Sep. 29, 1982, Ser. No. 426,276

Claims priority, application Japan, Aug. 9, 1982, 57-138104

Int. Cl.[4] B01D *13/04*

U.S. Cl. 210—500.28 **7 Claims**

1. A semipermeable membrane comprising a semipermeable film of a polymeric material, said film having a surface comprised of a poly (arylacetylene) having at least a part of its benzene nuclei introduced with sulfonic acid groups, said poly (arylacetylene) being represented by the following structural formula (I):



(I)

wherein X stands for Cl, Br or CH_3, R stands for H or CH_3 and n is a positive integer.

4,614,587

WASTEWATER TREATMENT METHOD

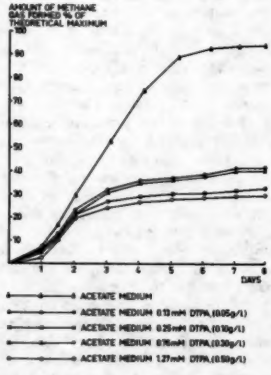
Per-Erik Andersson, Sundsvall, and Thomas G. Welander, Malmö, both of Sweden, assignors to Purac Aktiebolag, Lund, Sweden

Filed Mar. 29, 1985, Ser. No. 717,673

Claims priority, application Sweden, Apr. 11, 1984, 8402018

Int. Cl.[4] C02F *3/28*

U.S. Cl. 210—603 **5 Claims**



1. A method for anaerobically treating wastewaters from

manufacture of mechanical pulp from forest industries which contain strong toxically acting complexing substances having a logarithm for their complexing constant with bivalent iron exceeding about 8.5 comprising adding to the water prior to or at the anaerobic treating step at least one metal selected from the group iron, calcium, magnesium and aluminum, the metals iron and aluminum being added in such an amount that:

$$0.1<y<10;$$

and the metals calcium and magnesium being added in such an amount that:

$$1<y<10,$$

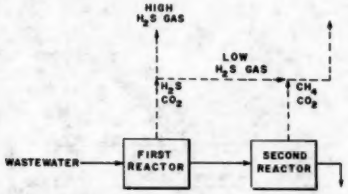
where y is the mole ratio of metal/complexing agent.

4,614,588

METHOD FOR SULFIDE TOXICITY REDUCTION

Alan Y. Li, Stamford, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Aug. 22, 1985, Ser. No. 768,391
Int. Cl.[4] C02F *3/28*
U.S. Cl. 210—603 **4 Claims**



1. A method of sulfide toxicity reduction in two-phase anaerobic treatment of organic wastewater high in sulfur content comprising:

feeding said organic wastewater to a first reactor;

maintaining said first reactor at a pH in the range between 5–6;

converting sulfate and/or sulfite compounds in said organic wastewater into sulfide gas by means of a sulfate reducing bacteria, thereafter exhausting said sulfide gas from said first reactor; and

feeding the desulfurized wastewater to a second reactor having a pH around 7 for converting the organics in said desulfurized wastewater first to organic acids then to methane gas and recovery of said gas; whereby at least 90% of the sulfur contained in said organic wastewater is exhausted from said first reactor such that said second reactor has a much reduced sulfur content in the wastewater received via said first reactor.

4,614,589

METHOD AND APPARATUS FOR BIOLOGICAL AEROBIC WASTEWATER TREATMENT

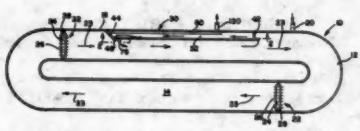
Frank G. Weis, Kansas City, Mo., assignor to Smith & Loveless, Lenexa, Kans.

Filed Feb. 12, 1985, Ser. No. 700,757
Int. Cl.[4] C02F *3/18, 11/12*; B01D *21/02*
U.S. Cl. 210—608 **56 Claims**

1. In a biological aerobic treatment process wherein oxygen is induced into a mixed liquor flow path within an oxidation ditch, a method for automatically varying the volume of oxygen induced into the mixed liquor flow path in proportion to the volume of wastewater entering the oxidation ditch, comprising the following steps:

(a) providing a first means for inducing oxygen into the mixed liquor flow path in a volume proportional to the level of the mixed liquor flow path in the oxidation ditch; and

(b) providing proportional flow weir means for withdrawing



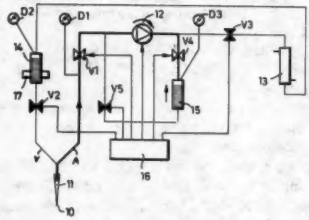
liquid from the oxidation ditch in a manner which automatically varies the level of mixed liquor within the oxidation ditch in direct proportion to the volume of wastewater entering the oxidation ditch.

4,614,590

DIALYSIS APPARATUS AND METHOD FOR ITS CONTROL

Dieter Rath, and Peter Seeck, both of Melsungen, Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Sep. 28, 1984, Ser. No. 655,731
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1983, 3335744
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—637 **11 Claims**



11. A method for controlling a dialysis apparatus having a cannula; a blood line, coupled to said cannula, branching into an arterial line and a venous line; a pump, having an inlet and an outlet, coupled to said arterial line, said blood line including a circuit disposed in parallel with said pump; a first valve, coupled to said arterial line between said pump and said cannula; a second valve, coupled to said venous line; a dialyzer, coupled to said blood line between said pump and said venous line; an expansion chamber, coupled to said circuit; a third valve, coupled to said blood line between said outlet of said pump and said dialyzer; a fourth valve, coupled to said circuit between said outlet of said pump and said expansion chamber; and, a fifth valve, coupled to said circuit between said inlet of said pump and said expansion chamber, said method comprising:

calculating, during an inflow phase, a first time integral of a delivery of said pump;

comparing said first time integral with a predetermined capacity of said expansion chamber;

closing, when said first time integral substantially equals said capacity, said first and fourth valves;

opening, when said first time integral substantially equals said capacity, said second, third and fifth valves;

calculating, during a return flow phase, a second time integral of a delivery of said pump;

comparing said second time integral with said capacity of said expansion chamber;

closing, when said second time integral substantially equals said capacity, said second, third and fifth valves; and,

opening, when said second time integral substantially equals said capacity, said first and said fourth valves.

4,614,591

METHOD TO PURIFY WATER

Sven E. Jorgensen, Vaerlose, Denmark, assignor to SRS Water Research Corporation AB, Stockholm, Sweden

PCT No. PCT/SE84/00122, § 371 Date Dec. 5, 1984, § 102(e) Date Dec. 5, 1984, PCT Pub. No. WO84/03881, PCT Pub. Date Oct. 11, 1984

PCT Filed Apr. 5, 1984, Ser. No. 679,046

Claims priority, application Sweden, Apr. 6, 1983, 8301888

Int. Cl.⁴ B01J *47/04*

U.S. Cl. 210—669 **5 Claims**

1. Water purification process comprising:

filtering the water through sand;

oxygenating said water;

treating said water by exposure to an ion exchange mixture consisting of 40–70 percent clinoptilolite, 30–15 percent anion exchanger and 30–15 percent cation exchanger;

wherein said anion and cation exchangers are of the cellulose type.

4,614,592

PROCESS FOR REMOVING MERCURY FROM AQUEOUS SOLUTIONS

John M. Googin; John M. Napier, both of Oak Ridge; Mark A. Makarewicz, and Paul F. Meredith, both of Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 4, 1985, Ser. No. 707,775

Int. Cl.⁴ C02F *1/28*

U.S. Cl. 210—679 **1 Claim**

1. A process for removing mercury from water so that the concentration of mercury remaining does not exceed two parts per billion comprising:

conducting said process at pH of 5 to pH 10;

contacting an anion exchange material with a solution containing sulfide ions wherein said anion exchange material is selected from the group; an anion exchange resin with amine active sites, an anion exchange resin with quaternary ammonium active sites, a water insoluble amine dissolved in a resin, or a water insoluble amine absorbed on a high surface area water insoluble solid; and said sulfide ions are derive from a compound selected from the group; sodium sulfide, potassium sulfide, lithium sulfide, calcium sulfide, or other sulfide compounds capable of reacting with said anion exchange material and releasing a soluble salt that does not react with said anion exchange material, said anion exchange material and said sulfide ions present in a concentration sufficient to form a sulfide form of said anion exchange material resulting in a converted material;

contacting said converted material with a solution containing an iron (II) ion that is derived from a compound selected from the group: iron (II) halide, iron (II) sulfate, iron (II) carbonate, or other iron (II) compounds capable of forming iron (II) sulfide when contacted with said converted material resulting in an iron (II) sulfide permeated material;

washing with water any excess of said solution containing said iron (II) ion from said iron (II) sulfide permeated material;

contacting said iron (II) sulfide permeated material with water containing mercury resulting in the removal of mercury from water producing water containing not more than two parts per billion mercury; and

separating said water containing not more than two parts per billion mercury from said iron (II) sulfide permeated resin

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4,614,593

DEMULSIFICATION OF OIL-IN-WATER EMULSIONS

David N. Roark, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 716,938, Mar. 28, 1985. This application Sep. 12, 1985, Ser. No. 775,167

Int. Cl.⁴ C02F *1/56*

U.S. Cl. 210—708 **37 Claims**

1. A process of demulsifying an oil-in-water emulsion which comprises admixing with the emulsion a water-soluble polymer of monoallylamine that causes formation of and separation between an oil phase and an aqueous phase to occur wherein said emulsion has a pH in the range of about 5 to about 10 and said polymer has a weight average molecular weight of at least 1000 and contains at least 95% by weight of monoallylamine.

4,614,594

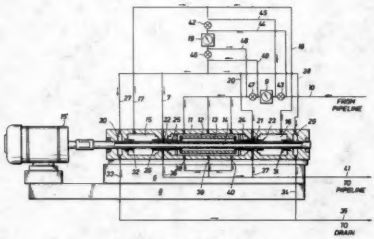
BS AND W MEASUREMENT SYSTEM

Thomas L. Stewart, Houston, and Florian C. Demny, Pasadena, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 9, 1985, Ser. No. 773,681

Int. Cl.⁴ B01D *33/00, 37/00*

U.S. Cl. 210—746 **5 Claims**



1. A process for measuring the water and sediment content of a wet stream which is predominantly non-aqueous, comprising:

removing a sample of the wet stream and measuring its capacitance in a first capacitance cell;

feeding the wet stream sample into an outer chamber containing an inner chamber having a wall formed of a filter;

rotating the inner chamber while pressuring the wet stream sample from the outer chamber into the inner chamber;

withdrawing a clean dry stream sample from the inner chamber and measuring its capacitance in a second capacitance cell; and

periodically passing the wet stream sample to the second capacitance cell and the dry stream sample to the first capacitance cell.

4,614,595

METHOD OF WATER TREATMENT

Michael Azzarella, Palm Springs, Calif., and Frederick L. Luth, Garland, Tex., assignors to Coral, Inc., Waukegan, Ill.

Continuation of Ser. No. 647,938, Sep. 5, 1984, abandoned. This application Jun. 24, 1985, Ser. No. 748,568

Int. Cl.⁴ C02F *1/50*

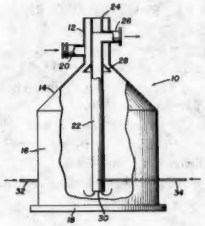
U.S. Cl. 210—754 **14 Claims**

1. A method for decolorizing color bodies in swimming pool water comprising establishing in said pool water a concentration of chloramines sufficient to decolorize said color bodies, said chloramines resulting from the addition to said pool water of between about 2 and about 10 ppm ammonium ions and between about 2.75 and 24.44 ppm chlorine ions, the level of addition of said ions to said pool water being selected to cause the free available chlorine content of said pool water to be substantially depleted.

4,614,596
APPARATUS AND METHOD FOR DISSOLVING A GAS IN AN AQUEOUS STREAM

David K. Wyness, 1624 Willemoore, Springfield, Ill. 62704

Filed Jan. 10, 1985, Ser. No. 690,126
Int. Cl.[4] C02F 1/72
U.S. Cl. 210—754 31 Claims



1. A method of dissolving a gas in water which comprises:
directing an aqueous stream to rotate in a downwardly moving spiral stream from a high downward velocity to a lower downward velocity; and
diffusing a gas into the aqueous stream so as to produce small gas bubbles which are rotated in a generally spiral path by the aqueous stream thereby providing a long flow distance over which the bubbles have increased contact time with the aqueous stream to facilitate dissolution of the gas therein and in which rising of the gas bubbles is progressively opposed by the increased downward velocity of the aqueous stream higher in the vessel.

19. A vessel, for dissolving a gas in water, having a vertical axis and which is circular in horizontal section for most of its height;
the vessel having upper and lower ends;
the vessel including a conical portion with the apex at the upper end of the vessel;
an aqueous stream inlet tangential to the vessel and communicating with the vessel interior space near the vessel upper end, whereby an aqueous stream fed to the vessel through the inlet rotates in a downwardly moving spiral stream from a high downward velocity in the upper portion of the vessel to a lower downward velocity in the lower portion of the vessel; and
a gas diffuser means in the vessel for diffusing a gas into the aqueous stream so as to produce small gas bubbles which are rotated in generally spiral path by the aqueous stream thereby providing a long flow distance over which the bubbles have increased contact time with the aqueous stream to facilitate dissolution of the gas therein and in which rising of the gas bubbles is progressively opposed by the increased downward velocity of the aqueous stream higher in the vessel.

4,614,597
RECOVERY OF OIL AND SULFONATE FROM FILTER CAKE

Frank A. Stuart, San Rafael, and William H. Tyson, Jr., Moraga, both of Calif., assignors to Claypro U.S.A., San Francisco, Calif.

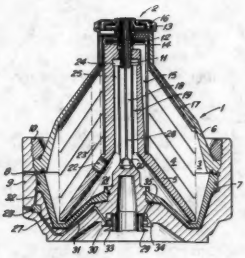
Continuation-in-part of Ser. No. 526,011, Aug. 24, 1983, Pat. No. 4,544,491. This application Dec. 17, 1984, Ser. No. 682,670
The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.
Int. Cl.[4] B01D 12/00
U.S. Cl. 210—772 5 Claims

1. A process for treating filter cakes obtained by filtering oils containing an alkaline earth metal sulfonate employing a siliceous filter aid to recover oil and sulfonate from the filter cake which comprises:
(a) mixing the filter cake with a quantity of 0.5 to 16N acid selected from the group consisting of phosphoric acid and sulfuric acid, sufficient to form a mixture having a pH in the range about 2 to 7 and maintaining the mixture at a temperature above 150° F., and;
(b) settling the hot mixture to separate an upper oil-sulfonate phase and a lower phase comprising acid and filter aid and;
(c) recovering the upper phase.

4,614,598
CENTRIFUGAL SEPARATOR DRUM FOR THE CLARIFICATION AND SEPARATION OF LIQUIDS

Karl-Heinz Zettier; Paul Bruning; Reinhard Schmidt, and Heinrich Hemfort, all of Oelde, Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Continuation of Ser. No. 267,818, May 19, 1981, abandoned. This application May 7, 1985, Ser. No. 731,422
Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019737
Int. Cl.[4] B01D 33/02; B04B 11/06
U.S. Cl. 210—781 11 Claims



1. A method of centrifugally separating liquids comprising providing a centrifugal drum separator having at least one paring means for the removal of the clarified or separated liquids, a stationary open inlet tube with an outlet which communicates through an opening with a smooth, cylindrical inlet chamber, rotatable with the drum and affixed thereto, a forechamber for receiving liquid from the inlet chamber, and a separating chamber for the clarification and separation, said inlet chamber having outlet ports which are axially spaced from said opening and lead out of the inlet chamber into the forechamber; feeding liquid into the inlet tube at a velocity of at least 5 m/s; disposing the outlet of the inlet tube at a distance of at least thrice the inside diameter of the inlet chamber from the entry of the outlet ports; providing the total cross section of the outlet ports to be larger than the cross section of the inlet tube and smaller than the cross section of the inlet chamber and the inside diameter of the inlet chamber to be about 1.4 times larger than the inside diameter of the inlet tube; choking the flow from the outlet ports to the forechamber to increase the liquid pressure in the lower part of the inlet chamber ahead of the outlet ports to keep the inlet chamber substantially filled with liquid; and venting gas released from the liquid in the forechamber to an annular chamber at the outlet of the inlet tube to be entrained by the liquid flowing out of the inlet tube and into the inlet chamber.

2. In a centrifugal drum separator for the clarification and separation of liquids, having at least one paring means for the removal of the clarified or separated liquids, a stationary open inlet tube with an outlet, a smooth, cylindrical inlet chamber, rotatable with the drum and affixed thereto and receptive of liquid from the stationary inlet tube, a forechamber for receiving liquid from the inlet chamber, and a separating chamber for the clarification and separation, said inlet chamber having outlet ports which are axially spaced from said opening and lead out of the inlet chamber into the forechamber which

communicates with the separating chamber, the improvement wherein: the distance from the outlet in the inlet tube to the entry of the outlet ports of the inlet chamber is at least thrice the inside diameter of the inlet chamber, the total cross section of the outlet ports is smaller than the cross section of the inlet chamber and larger than the cross section of the inlet tube, the inside diameter of the inlet chamber is larger by about 1.4 times than the inside diameter of the inlet tube, choke means disposed at the outlet ports of the inlet chamber and upstream of the forechamber for increasing the liquid pressure in the lower part of the inlet chamber upstream of the outlet ports to keep the inlet chamber substantially filled with liquids during the feeding of liquid into the drum, means forming an annular chamber at the outlet of the inlet tube and in communication with the inlet tube and means forming at least one vent passage from the forechamber to the annular chamber to provide a vent for gas released from the liquid, whereby gas collecting in the annular chamber is entrained by the liquid flowing out of the inlet tube and into the inlet chamber.

4,614,599

ENCAPSULATED LIME AS A LOST CIRCULATION ADDITIVE FOR AQUEOUS DRILLING FLUIDS

Clarence O. Walker, Richmond, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,627
Int. Cl.[4] C09K *7/02*
U.S. Cl. 252—8.512 **6 Claims**

1. A drilling fluid additive for reducing lost circulation of aqueous drilling fluids in a borehole penetrating an underground formation, comprising:

lime encapsulated by an organic wax having a melting point below the temperature of the underground formation and above the bottom hole circulating temperature of the drilling fluid within the borehold, said encapsulation to prevent the lime from reacting with clays in the borehole and drilling fluid until it is desired to melt the organic wax encapsulation.

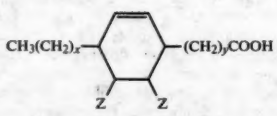
4,614,600

CORROSION INHIBITORS

Peter Schilling, and David V. Braddon, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,971
Int. Cl.[4] C23F *11/04;* **E21B** *43/27*
U.S. Cl. 252—8.553 **28 Claims**

1. A composition for inhibiting the corrosive effects of acids on steel or ferrous metal surfaces exposed to an acidic corrosive fluid comprising a condensate of a polyamine with a polycarboxylic acid selected from the group consisting of the general formula



wherein x and y are integers from 3 to 9, x and y together equal 12, one Z is COOH and the remaining Z is selected from the group consisting of H and COOH, the anhydrides of said general formula and mixtures thereof and further comprising propargyl alcohol in an amount of from about 25 to about 75 parts per 100 parts by weight of the total corrosion inhibiting composition.

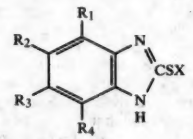
4,614,601

COMPLETION AND WORKOVER FLUIDS

Yukihiko Sekimoto, Saitama; Makoto Yanagida, Tokyo, and Shoichi Kanda, Kanagawa, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

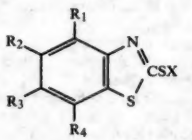
Filed Apr. 2, 1985, Ser. No. 719,391
Claims priority, application Japan, Apr. 2, 1984, 59-63402; Apr. 2, 1984, 59-63406; May 22, 1984, 59-101778; May 22, 1984, 59-101779
Int. Cl.[4] E21B *43/00;* **C08L** *1/26*
U.S. Cl. 252—8.551 **4 Claims**

1. An aqueous completion and workover fluid containing at least one soluble salt selected from the group consisting of calcium chloride, calcium bromide and zinc bromide, a hydroxyethyl cellulose present as a viscosifier, and at least one compound selected from the group consisting of 2-mercaptobenzimidazole compounds, 2-mercaptobenzothiazole compounds, 2-mercaptothiazoline and 2-thioimidazolidone, wherein the 2-mercaptobenzimidazole compounds are represented by the formula (I)



(I)

wherein each of R_1, R_2, R_3, and R_4 represents a hydrogen atom or a lower alkyl group, and X represents a hydrogen atom, an alkali metal, or ammonium, and the 2-mercaptobenzothiazole compounds are represented by the formula (II)



(II)

wherein each of R_1, R_2, R_3, and R_4 represents a hydrogen atom or a lower alkyl group, and X represents a hydrogen atom, an alkali metal, or ammonium, and the concentration of said compounds contained in the fluid is from about 0.001% to about 0.2% by weight, based on the total weight of the fluid.

4,614,602

LUBRICANT OVERBASED DETERGENT-DISPERSANTS WITH IMPROVED SOLUBILITY

Joseph J. Valcho, Naperville; Francis J. Slama, Montgomery; Joseph S. Strukl, Lisle, and Chang-Man Park, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed May 1, 1985, Ser. No. 729,468
Int. Cl.[4] C10M *125/00*
U.S. Cl. 252—33.3 **11 Claims**

1. A lubricating composition comprising a major amount of a lubricating oil composition and a minor amount of an overbased detergent-dispersant lubricant additive, in an amount of from about 0.5% to about 15% by weight of the total weight of said lubricating oil composition, said additive comprising a reaction product of an alkaline earth metal phenate, and an ammonium alkylbenzene sulfonate, wherein said phenate and said sulfonate are reacted in the presence of an alcohol to 1 to 4 carbon atoms, at a temperature of from about 25° C. to about 90° C. and pressure of from about 0.5 to about 7 atmospheres, and said reaction product is stripped at a temperature of from about 100° C. to about 200° C. and pressure of from about 0.1 to about 1 atmosphere, to remove ammonia, water and said alcohol.

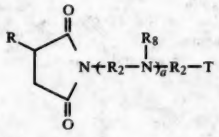
4,614,603

MODIFIED SUCCINIMIDES (III)

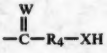
Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 12, 1985, Ser. No. 722,881
Int. Cl.[4] C10M *105/50, 105/56*
U.S. Cl. 252—51.5 A **16 Claims**

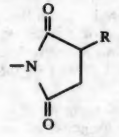
6. A compound of the formula:



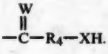
wherein a is an integer from 1 to 6; R is alkenyl or alkyl of from 10 to 300 carbon atoms; R_2 is alkylene of from 2 to 10 carbon atoms; R_8 is hydrogen, alkyl of from 1 to 6 carbon atoms and



wherein W is oxygen or sulfur; X is oxygen, sulfur or $>NR_5$ wherein R_5 is hydrogen or alkyl of from 1 to 20 carbon atoms; and R_4 is an alkylene group of from 2 to 5 carbon atoms or an alkylene group of from 2 to 5 carbon atoms substituted with from 1 to 3 alkyl groups of from 1 to 2 carbon atoms each with the proviso that X and W are not both oxygen; T is $—NHR_8$ or



wherein R_8 and R are as defined above with the further proviso that the compound contains at least one R_8 which is



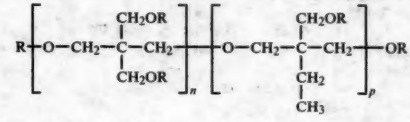
4,614,604

LUBRICANTS FOR SHAPING POLYVINYL CHLORIDE, WHICH CONTAIN ESTERIFIED OLIGOMERIC POLYHYDRIC ALCOHOLS

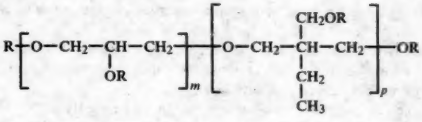
Herbert Helfert, Frankenthal; Wolf-Dieter Balzer, Ludwigshafen; Guenter Hatzmann, Leimen; Wolfram Dietsche, Frankenthal; Albert Hettche, Hessheim, and Stefan Weiss, Neckargemuend, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Continuation of Ser. No. 613,223, Jul. 19, 1984, abandoned, which is a continuation of Ser. No. 370,906, Apr. 22, 1982, abandoned. This application Jul. 22, 1985, Ser. No. 757,923
Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118417
Int. Cl.[4] C10M *129/74*
U.S. Cl. 252—56 S **8 Claims**

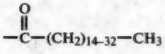
1. A lubricant for shaping polyvinylchloride having an active ingredient which consists of esters having the following formula:



wherein n is from about 2 to 4 and p is from 1 to about 3; and



wherein p is 1 and m is 1, 4 or 6; R is hydrogen or the fatty acid radical:



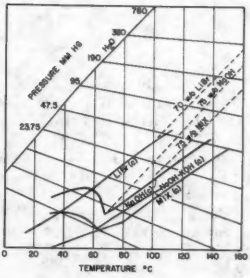
and wherein the degree of esterification is from 50 to 80%, and the molecule contains the monomer units in blocks or in random distribution.

4,614,605

WATER VAPOR ABSORBENT CONTAINING CESIUM HYDROXIDE

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Mar. 13, 1985, Ser. No. 711,233
Int. Cl.[4] C09K *5/04*; F25B *15/16*
U.S. Cl. 252—69 **14 Claims**



1. An absorption cycle apparatus wherein the working fluid is water and wherein the improvement comprises an absorbent comprised of an aqueous mixture of cesium hydroxide plus at least one of potassium hydroxide and sodium hydroxide.

11. A composition of matter for reversibly absorbing and desorbing water vapor comprised of an aqueous solution containing between 5 and 50 weight percent water and containing nonaqueous component comprised of between 3 and 60 weight percent of CsOH and between 20 and 80 weight percent of each of KOH and NaOH.

4,614,606

LIQUID SCOURING COMPOSITIONS

David Machin, South Wirral, and John F. Helliwell, Wirral, both of Great Britain, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 30, 1984, Ser. No. 666,393
Claims priority, application United Kingdom, Oct. 31, 1983, 8328991
Int. Cl.[4] C11D *3/14, 9/20*
U.S. Cl. 252—116 9 Claims

1. A liquid scouring composition consisting essentially of, by weight of the total composition, from 1 to 65% of a particulate abrasive material, and from 35 to 99% of an aqueous liquid suspending medium which consists essentially of, by weight of the medium:

(a) from 3 to 15% of a synthetic anionic detergent-active material;

(b) from 1 to 12% of a detergent-active material selected from the group consisting of zwitterionic and alkoxylated non-ionic detergent-active materials;

(c) a foam-regulating system consisting essentially of;

(1) from 0.5 to 7% of a tripolyphosphate electrolyte; and,

(2) from 0.05 to 8% of a calcium^{2+}-dependent foam-depressing agent selected from group consisting of alkali metal salts of C_{10}–C_{24} fatty acid soaps and phosphate esters; the weight ratio of component (2) to component (1) being from 1:2 to 1:4; and

(3) from 0 to 20% further electrolytes.

4,614,607

NON-CHROMATED DEOXIDIZER

David M. Loch, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 654,502, Sep. 26, 1984, abandoned. This application Mar. 15, 1984, Ser. No. 711,943
Int. Cl.[4] C11D *7/08*
U.S. Cl. 252—142 14 Claims

1. A deoxidizer for cleaning metals, particularly aluminum and aluminum alloys comprising an aqueous solution of nitric and sulfuric acid made by mixing the acids or their salts to provide about 1.5–4.0N NO_3^-, 2.5–15.0N $SO_4^=$ about 0.5–16 oz/gal ammonium bifluoride, and an effective buffering amount of a nitrate salt to slow the rate of ammonium bifloride consumption.

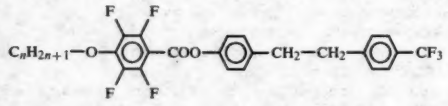
4,614,608

ORGANIC COMPOUND HAVING A SMECTIC A PHASE, MIXTURE CONTAINING SAID COMPOUND AND PROCESS FOR PRODUCING THE SAME

Pierre Le Barny, Orsay; Jean C. Dubois, St. Remy les Chevreuse, and Gilles Ravaux, Les Ulis, all of France, assignors to Thomson-CSF, Paris, France

Filed Mar. 13, 1985, Ser. No. 711,366
Claims priority, application France, Mar. 16, 1984, 84 04109
Int. Cl.[4] C09K *3/34;* G02F *1/13;* C07C *69/76*
U.S. Cl. 252—299.64 5 Claims

1. An organic compound having at least one mesomorphic phase of the smectic A type in accordance with the general chemical formula:



in which $1 \leqq n \leqq 15$.

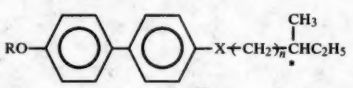
4,614,609

LIQUID CRYSTALLINE BIPHENYL DERIVATIVES AND MIXTURES THEREOF

Hiromichi Inoue; Shinichi Saito; Kanetsugu Terashima; Takashi Inukai, all of Yokohamashi, and Kenji Furukawa, Yokosukashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 24, 1984, Ser. No. 613,974
Claims priority, application Japan, Jun. 14, 1983, 58-106100; Jul. 5, 1983, 58-121769
Int. Cl.[4] C09K *3/34;* G02F *1/13;* C07C *69/773, 69/88, 43/205*
U.S. Cl. 252—299.66 4 Claims

1. A liquid crystal compound expressed by the formula



wherein R represents a linear chain alkyl group of 1 to 18 carbon atoms, X represents —CH_2— or —O—, and n is 0, 1 or 2.

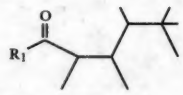
4,614,610

BRANCHED CHAIN SATURATED KETONES AND ORGANOLEPTIC USES THEREOF

Richard M. Boden, Ocean, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

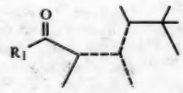
Division of Ser. No. 463,484, Feb. 3, 1983, Pat. No. 4,469,892, which is a division of Ser. No. 399,067, Jul. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 354,389, Mar. 2, 1982, Pat. No. 4,405,820, which is a division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Mar. 14, 1984, Ser. No. 589,506
The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.
Int. Cl.[4] A61K *7/46*
U.S. Cl. 252—522 R 5 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition, perfumed article or cologne comprising the step of intimately admixing with said perfume composition, perfumed article or cologne a composition of matter consisting essentially of at least one ketone defined according to the structure:



wherein R_1 is C_1–C_3 lower alkyl produced according to a process consisting essentially of the steps of:

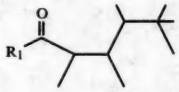
(i) contacting with hydrogen at least one compound defined according to the structure:



wherein R_1 is C_1–C_3 lower alkyl and one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents carbon-carbon single bonds in the presence of a catalyst at a pressure in the range of from 40–400 psig; and

(ii) fractionally distilling the resulting product at a temperature and pressure whereby a composition of matter con-

sisting essentially of at least one ketone defined according to the structure:



is recovered.

4,614,611

ORGANOLEPTIC USES OF PARA-METHYLACETOPHENONE DIMETHYLACETAL

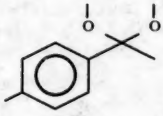
Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Feb. 6, 1985, Ser. No. 698,861

Int. Cl.[4] A61K *7/46*; C11B *9/00*

U.S. Cl. 252—522 R **4 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of adding to said perfume composition, an aroma augmenting or enhancing amount of para-methylacetophenone dimethylacetal having the structure:



4,614,612

LIQUID DETERGENT COMPOSITION

John T. Reilly, Wirral; Roy B. Hobson, Clwyd, and Gordon J. Abdey, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 174,945, Aug. 4, 1980, abandoned, which is a continuation of Ser. No. 972,153, Dec. 21, 1978, abandoned. This application May 16, 1983, Ser. No. 494,677

Claims priority, application United Kingdom, Dec. 22, 1977, 55472/77

Int. Cl.[4] C11D *1/22, 1/29, 1/37, 3/382*

U.S. Cl. 252—541 **1 Claim**

1. An aqueous liquid detergent composition, especially adapted for dishwashing, having a pH of from 5.5 to 9 and comprising 5–25% by weight of a lemon juice and 5–60% by weight of an organic synthetic surfactant system consisting essentially of from 30–90% parts by weight of a water-soluble C_{8-16} alkyl benzene sulfonate and from 70–10 parts by weight of C_{8-20} alkylpolyethoxysulfate having about 3 ethoxy groups, both said sulfonate and said sulfate being present in the form of alkali metal salts, ammonium salts or mixtures thereof.

4,614,613

PREPARATION OF β-N-AZIRIDINOPROPIONATES

Rolf Fikentscher; Siegfried Schneider; Erhard Klahr, all of Ludwigshafen; Friedrich Reinert, Wachenheim; Günter Eckert, Limburgerhof, and Adolf Stuebinger, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 628,773

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324917

Int. Cl.[4] C07D *203/08*

U.S. Cl. 548—964 **7 Claims**

1. A process for the preparation of a β-N-aziridinopropionate of a relative high boiling alcohol or polyalcohol, which comprises:

transesterifying a β-N-aziridinopropionate of a lower alcohol of 1 to 4 carbon atoms with a relatively high boiling alcohol or polyalcohol in the presence of from 0.01–0.3% by weight, based on the reactants, of a titanium (IV) or tin (IV) compound, which is soluble in an organic medium, at a temperature of 80° to 180° C.; and

removing the lower alcohol which is liberated by the transesterification reaction by entraining the lower alcohol from the reaction medium with a liquid saturated hydrocarbon or by stripping the alcohol from the medium with nitrogen gas.

4,614,614

PROCESS FOR THE MANUFACTURE OF OPTICALLY ACTIVE AZETIDINONES

Ivan Ernest, Birsfelden; Jaroslav Kalvoda, Binningen, and Wolfgang Fröstl, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,312

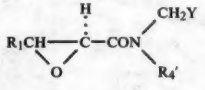
Claims priority, application Switzerland, Mar. 28, 1983, 1678/83

Int. Cl.[4] C07D *205/08, 303/48*

U.S. Cl. 540—359 **19 Claims**

1. A process which comprises the step of treating in an aprotic organic solvent either

(i) an oxirane carboxylic acid amide of the formula:



wherein

R_1 is hydrogen or lower alkyl;

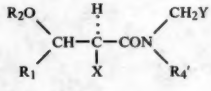
Y is $—SOR_3$, $—SO_2R_3$ or $—COOR_3$ in which R_3 is tert.-lower alkyl, cycloalkyl-lower alkyl, triphenylmethyl, naphthyl, phenyl, or phenyl substituted with one or two members selected from the group consisting of lower alkyl, lower alkoxy, nitro and halo;

R_4' is a group capable of protecting the nitrogen atom to which it is bound against reaction with fluoride ion;

the configuration about the carbon atom of the depicted oxirane ring to which R_1 is bound when R_1 is lower alkyl is either R or S; and

the configuation about the other carbon atom of the oxirane ring is R; or

(ii) a 2,3-disubstituted alkanoic acid amide of the formula:



wherein

R_1, R_4', and Y are as herein defined;

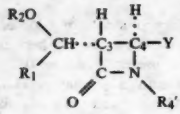
R_2 is hydrogen or a protecting group capable of protecting an alcoholic hydroxy group from oxidation;

X is a nucleofugal group;

the configuration about the carbon atom to which R_1 is bound when R_1 is lower alkyl is either R or S; and

the configuration about the carbon atom to which X is bound is R;

with a source of fluoride ion to yield a (3S)-3,4-trans-disubstituted azetidinone of the formula:



wherein R_1, R_2, R_4', and Y are as herein defined with the proviso that R_2 is hydrogen when said oxirane carboxylic acid is treated with the source of fluoride ion;

the configuration about the carbon atom designated 3 is R;

the configuration about the carbon atom designated 4 is such as to correspond to R if Y is $-SOR_3$ or $-SO_2R_3$, and to S if Y is $-COOR_3$; and

the configuration about the carbon atom to which R_1 is bound when R_1 is lower alkyl is either R or S.

4,614,615

PROCESS FOR PREPARING AN N-SUBSTITUTED CARBAMOYL-LACTAM COMPOUND

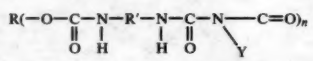
Kaneyoshi Ashida, 23560 E. Newell Cir., Farmington Hills, Mich. 48024; Jozef L. M. van der Loos, Rijksweg Zuid 146, 6134 AE Sittard, Netherlands, and Kurt C. Frisch, 17986 Park La., Grosse Ile, Mich. 48138

Continuation-in-part of Ser. No. 592,083, Mar. 22, 1984, abandoned. This application Apr. 15, 1985, Ser. No. 723,309

Int. Cl.[4] C07D *223/10, 211/16, 207/38*

U.S. Cl. 540—525 **20 Claims**

1. A process for preparing an n-substituted carbamoyl lactam compound having the formula:



which comprises admixing a polyhydroxy compound having the formula $R(OH)_n$ wherein

n has a value of at least 3, with a diisocyanate having the formula OCN—R'—NCO, at an NCO/OH equivalence ratio >2 wherein,

R' is divalent hydrocarbon residue radical having from 6 to 25 carbon atoms,

and then reacting the product thereof with at least one lactam, said lactam having a 4 to 14 carbon ring, wherein Y is a C_3–C_{13} alkylene group.

5. Process according to claim **1**, wherein said lactam is ϵ-caprolactam.

4,614,616

PROCESS FOR PREPARING 3β7β-DIHYDROXY-Δ[5]-STEROIDS

Karl Petzoldt; Rudolf Wiechert; Henry Laurent; Klaus Nickisch, and Dieter Bittler, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

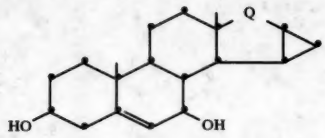
Division of Ser. No. 317,822, Nov. 3, 1981, Pat. No. 4,416,985. This application Sep. 26, 1983, Ser. No. 536,076

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3042135

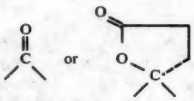
Int. Cl.[4] C07J *1/00*

U.S. Cl. 540—4 **7 Claims**

1. A process for selectively blocking the 3β OH of a 3β,7β-dihydroxy-Δ[5]-steroid of the formula



wherein Q is



comprising reacting the steroid with tert-butyldimethylsilyl chloride, dimethyl-2-(3-methylbutyl)silyl chloride, or tribenzylsilyl chloride, thereby obtaining the corresponding 3β-blocked-7β-free(OH)-Δ[5]-steroid.

4,614,617

INTERMEDIATES FOR 8-CHLORODIBENZ[(B,F)][1,4]OXAZEPINE-10(11H)-CARBOXYLIC ACID, 2-(SULFINYL- AND SULFONYL-CONTAINING ACYL)HYDRAZIDES

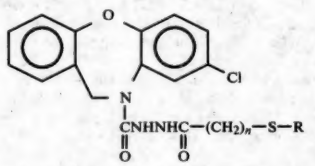
Richard A. Mueller, Glencoe, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 705,279, Feb. 25, 1985, Pat. No. 4,559,336. This application Aug. 26, 1985, Ser. No. 768,982

Int. Cl.[4] C07D *267/20*

U.S. Cl. 540—547 **4 Claims**

1. A compound of the formula:



wherein R is alkyl containing from 1 to 6 carbon atoms, inclusive; and

wherein n is an integer from 1 to 4, inclusive.

4,614,618

1,4-BIS(SUBSTITUTED-AMINO)-5,8-DIHYDROXY ANTHRAQUINONES AND LEUCO BASES THEREOF

Keith C. Murdock, Pearl River, N.Y., and Frederick E. Durr, Ridgewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 598,141, Apr. 9, 1984, Pat. No. 4,540,519, which is a division of Ser. No. 239,939, Mar. 2, 1981, Pat. No. 4,456,552, which is a division of Ser. No. 63,285, Aug. 2, 1979, Pat. No. 4,278,689, which is a division of Ser. No. 923,602, Jul. 11, 1978, Pat. No. 4,197,249, which is a continuation-in-part of Ser. No. 873,040, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,872, Aug. 15, 1977, abandoned. This application Jul. 22, 1985, Ser. No. 757,410

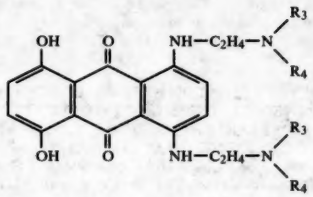
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.

Int. Cl.[4] C07C *97/26*

U.S. Cl. 260—380 **7 Claims**

1. A compound selected from the group consisting of those of the formulae:

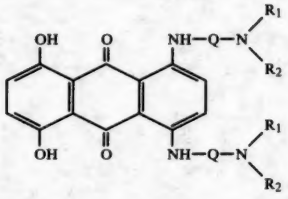
I.



wherein

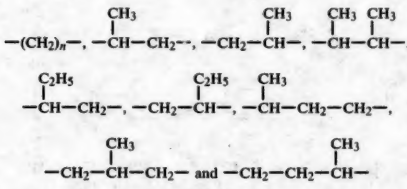
R_3 and R_4 are both methyl or both ethyl, and the leuco bases and tautomers thereof; said compounds being in solid form; and

II.



wherein

Q is a divalent moiety selected from the group consisting of those of the formulae:



wherein

n is an integer from 2 to 4, inclusive; R_1 and R_2 are each individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and monohydroxyalkyl having from 2 to 4 carbon atoms and wherein the carbon atom alpha is the nitrogen atom may not bear an hydroxy group with the proviso that R_1 and R_2 may not both be hydrogen or alkyl; and the leuco bases and tautomers thereof; and the pharmacologically acceptable acid-addition salts thereof.

4,614,619

LIQUID CRYSTALLINE MATERIALS USEFUL TO PREPARE POLYMERIC FILMS

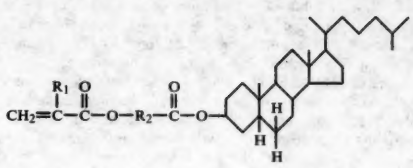
Paul J. Shannon, Millersville, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 450,088, Dec. 15, 1982, abandoned. This application May 29, 1985, Ser. No. 739,026

Int. Cl.[4] C09K *19/36, 19/38*

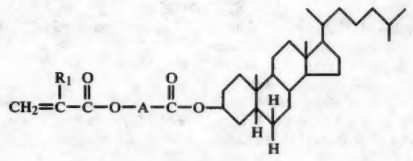
U.S. Cl. 260—397.2 **4 Claims**

1. Compounds having the structure



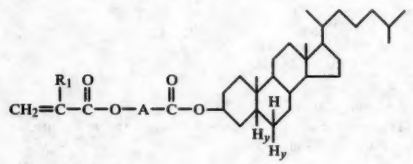
where R_1=H or CH_3, and R_2=an alkylene chain having from 3–14 methylene or lower alkyl-substituted methylene groups.

2. Compounds having the structure



where R_1=H or CH_3, A=—R_3O—, and R_3=an alkylene chain having from 2–14 methylene or lower alkyl-substituted methylene groups.

3. Compounds having the structure



where R_1=H or CH_3, A=—R_4O—, R_4=an alkylene ether, diether or triether having a total of from 3–14 carbon atoms in the alkylene moieties, provided that the terminal alkylene moiety adjacent the carbonate moiety comprises not less than two carbon atoms, and y=0 or 1.

4,614,620

PROCESS FOR PRODUCING I-BRASSICASTEROL

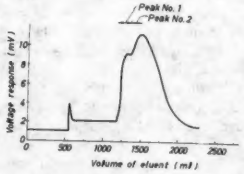
Yutaka Konai; Shoichiro Hayashi; Yoshikazu Kubota, and Kouichi Kodama, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1985, Ser. No. 702,633

Claims priority, application Japan, Feb. 28, 1984, 59-36921

Int. Cl.[4] C07J *9/00*

U.S. Cl. 260—397.25 **3 Claims**



1. A process for producing i-brassicasterol, comprising charging a mixture of i-sterols dervies from a mixture of sterols including brassicasterol into a column packed with a filler obtained by chemically binding alkyl group(s) of 15 to 24 carbon atoms to silica, and subjecting said mixture of i-sterols

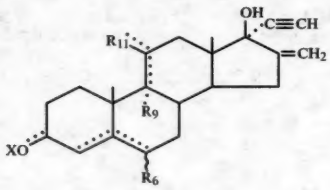
to reversed-phase partition column-chromatography while using (i) an alcohol of one to three carbon atoms or a mixture thereof, (ii) a mixed solvent comprising more than 50% by volume of said alcohol(s) and less than 50% by volume of water, or (iii) a mixed solvent comprising more than 50% by volume of said alcohol(s) and less than 50% by volume of a mixture of water and organic solvent(s) having a parameter of solvent strength (ϵ_o) of 0.4 to 0.7 selected from the group consisting of acetone, tetrahydrofuran, dioxane, chloroform, dichloromethane, methyl ethyl ketone, ethyl acetate, methyl acetate, dimethylsulfoxide, acetonitrile and a mixture thereof, as an eluent, thereby isolating and purifiying i-brassicasterol.

4,614,621
ETHYNYLATION OF 16-METHYLENE-17-KETO STEROIDS

Verlan H. VanRheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 20, 1984, Ser. No. 602,300
Int. Cl.[4] C07J *5/00*
U.S. Cl. 260—397.45 **20 Claims**

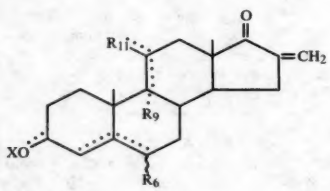
1. A process for the preparation of a C_3 protected 17α-ethynyl-17β-hydroxy-16-methylene steroid of the formula



(II A,C)

which comprises

(1) contacting a C_3 protected 17-keto-16-methylene steroid of the formula



(I A,C)

with stabilized monolithium acetylide in a dry solvent at a temperature of about 0° or less;

(2) maintaining the reaction temperature at about 0° or less; and

(3) quenching with a quenching agent where

R_6 is a hydrogen or fluorine atom, methyl or methylene group; when R_6 is methylene, there is no 5–6 double bond in formula (A) or in formula (C);

R_9 is nothing, a hydrogen, fluorine or oxygen atom which makes the C-ring

(a) $\Delta^{9(11)}$ when R_9 is nothing and

(b) 9β,11β-epoxide when R_9 is an oxygen atom;

R_{11} is a hydrogen or oxygen atom, two hydrogen atoms or α- or β-hydroxyl group which makes the C-ring

(a) $\Delta^{9(11)}$ when R_{11} is a hydrogen atom,

(b) 9β,11β-epoxide when R_{11} is an oxygen atom and between C_{11} and R_{11} is a single bond, and

(c) a ketone when R_{11} is an oxygen atom and between C_{11} and R_{11} is a double bond;

X is a hydrogen atom or nothing, when X is nothing, the at C_3 is a double bond, when X is a hydrogen atom, the at C_3 is a single bond;

is a single or double bond; and

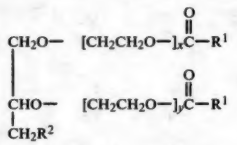
~ indicates that the attached atom or group can be in either the α or β configuration.

4,614,622
POLYOXYALKYLENE ETHERS OF GLYCERIN OR 1,2-PROPANEDIOL, ESTERIFIED WITH FATTY ACID AND/OR ISOSTEARIC ACID, THEIR SYNTHESIS AND USE AS THICKENING OR SOLUBILIZING AGENTS

Rüdolf Huettinger, and Ulrich Holtschmidt, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Oct. 24, 1983, Ser. No. 544,616
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239564
Int. Cl.[4] C11C *3/02*
U.S. Cl. 260—410.7 **4 Claims**

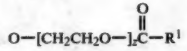
1. Compounds having the formula:



in which

R^1 is the hydrocarbon radical of a fatty acid with 16 to 18 carbon atoms, isostearic acid, or a mixture thereof,

R^2 is hydrogen or the



radical, x y and z are whole numbers

and the sum of x+y+z has a value from 50 to 60.

4,614,623
SULFONATION OF CRUDE OILS WITH GASEOUS SO_3 TO PRODUCE PETROLEUM SULFONATES

Donald E. Schroeder, Jr.; Mark A. Plummer, and Carle C. Zimmerman, Jr., all of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation of Ser. No. 180,250, Aug. 22, 1980, Pat. No. 4,560,517, which is a continuation of Ser. No. 22,668, Mar. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 430,963, Jan. 4, 1974, abandoned, which is a continuation-in-part of Ser. No. 238,084, Mar. 27, 1972, abandoned. This application May 16, 1985, Ser. No. 734,517
The portion of the term of this patent subsequent to Dec. 24, 2002, has been disclaimed.
Int. Cl.[4] C07C *139/00, 143/24*
U.S. Cl. 260—505 R **34 Claims**

1. A process for the preparation of a micellar dispersion containing a petroleum sulfonate, a hydrocarbon and an aqueous medium, the process comprising in combination contacting sulfur trioxide in the gas phase with a hydrocarbon feedstock selected from the group consisting of whole crude oil, topped crude oil and mixtures thereof in a reaction zone fed by a substantially continuous flow of said hydrocarbon feedstock, said hydrocarbon feedstock being contacted in said reaction zone with a substantially continuous flow of SO_3 vapor stream comprising sulfur trioxide vapor, sulfur dioxide vapor and light hydrocarbon vapor, the temperature in said reaction zone being maintained at about 120° to 250° F., the pressure in said reaction zone being maintained in the range of about 3 to about 50 psia, the reaction time being from about 0.005 to about 30 seconds; wherein each hundred pounds of said hydrocarbon feedstock is contacted with about 3 to about 30 pounds of

sulfur trioxide, with about 0.01 to about 10 moles of sulfur dioxide and with about 0.01 to about 10 moles of light hydrocarbon vapor; thereafter compressing the effluent from said reaction zone to a pressure of at least about 0.01 pounds per square inch higher than that prevailing in said reaction zone, thereafter separating a vapor stream and a liquid stream from said effluent in a vapor-liquid separating stage, recycling at least a portion of said vapor stream back to said reaction zone and recycling a portion of said liquid back to mix with said hydrocarbon feedstock being fed to said reaction zone, and removing the remaining portion of said liquid stream to a neutralization zone where it is reacted with a monovalent inorganic base to obtain the micellar dispersion, containing the hydrocarbon, aqueous medium and petroleum sulfonate which has an average equivalent weight of about 350 to about 525.

4,614,624

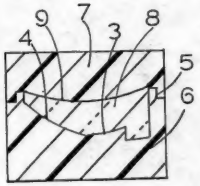
METHOD OF MOLDING BIFOCAL LENSES

Charles W. Neefe, 811 Scurry St.-Box 429, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 710,983, Mar. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 503,756, Jun. 13, 1983, abandoned. This application May 14, 1985, Ser. No. 734,129

Int. Cl.[4] B29D *11/00*

U.S. Cl. 264—2.5 **9 Claims**



1. A method of simultaneously casting from a liquid lens monomer the concave and convex surfaces of a one piece bifocal lens having a crescent shaped shorter radius segment by the steps of, providing a metal mold blank, cutting and polishing a first shorter radius optical surface in the central area of the metal mold blank, the first central circular shaped optical surface has a diameter equal to the width of the crescent shaped shorter radius lens segment, cutting and polishing a second longer radius optical surface on the metal mold having its center of curvature displaced from the shorter radius center of curvature to provide from 0.25 prism diopters to 3.0 prism diopters of refraction in the bifocal lens, the longer radius convex optical mold surface intersects the shorter radius convex mold optical surface to provide a crescent shaped shorter radius convex bifocal optical mold surface, a concave resinous negative image of the bifocal metal mold is made by applying a heated and softened resin mold material against the metal convex bifocal mold, a convex resinous optical mold is aligned with the bifocal concave resinous optical mold and the space between the concave bifocal resinous mold and the convex resinous mold is filled with a selected liquid lens monomer capable of being polymerized, the selected liquid lens monomer is allowed to polymerize between the convex resinous mold surface and the concave bifocal resinous mold surface forming a solid bifocal lens having a crescent shape shorter radius segment, the solid bifocal lens is removed from the resinous molds.

4,614,625

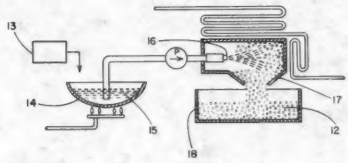
METHOD OF IMPARTING COLOR AND/OR FRAGRANCE TO CANDLE WAX AND CANDLE FORMED THEREFROM

William W. Wilson, Norwich, Ohio, assignor to Lumi-Lite Candle Company, Inc., Norwich, Ohio

Continuation of Ser. No. 470,191, Feb. 28, 1983, abandoned. This application May 8, 1985, Ser. No. 732,221

Int. Cl.[4] B05D *7/00;* **B29B** *9/00;* **D04H** *1/20;* **F23D** *3/16*

U.S. Cl. 264—6 **8 Claims**



8. A method of making a candle provided with an agent from a group comprising coloring and scenting agents suitable for candles, said method comprising the steps of:

(a) forming a plurality of generally rounded particles of candle wax;

(b) combining said agent with said particles;

(c) coating said particles with said agent by agitating said particles and causing them to rub against each other and coat said agent into the surface of said particles; and

(d) disposing said particles in surrounding relation to a candle wick.

4,614,626

METHOD FOR FABRICATING A TENNIS RACQUET FRAME

James R. Frerking, 1424 Northview Dr., Westlake, Calif. 91362

Filed Apr. 27, 1984, Ser. No. 604,864

Int. Cl.[4] B29C *67/22, 53/36, 53/56*

U.S. Cl. 264—46.4 **10 Claims**

5. A method for fabricating a racquet frame comprising the steps of

cutting plastic tubing into a plurality of sections of various predetermined lengths to form grommets,

installing said grommets in a first elongated mold having a plurality of slot sections, each in the general form of a "U" or "V" and running at various different angles, said grommets being installed in preselected corresponding slot sections,

placing a plastic filler in said first mold and molding said grommets into an elongated unitary strip,

installing wire means in a second elongated mold, said wire means running along the entire longitudinal entent of said second mold and therebeyond at both ends of the mold,

placing one entire longitudinal side of said elongated strip in said second attach,

placing plastic foam in said second mold to mold said wire means to said one side of said strip,

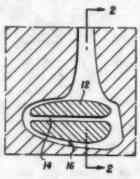
suspending said strip from said wire means and winding plastic impregnated fibers completely therearound, and

molding said strip with the plastic fibers therearound into the desired form of said racquet frame with the grommets molded within said frame.

4,614,627
METHOD OF INJECTION MOLDING A THERMOPLASTIC HOLLOW OR HOLLOW FOAM FILLED ONE PIECE HEAD OF A GOLF CLUB

Michael E. Curtis, Wakefield, and Robert C. Haines, Huddersfield, both of England, assignors to Dunlop Limited, England

Filed Sep. 7, 1983, Ser. No. 530,129
Claims priority, application United Kingdom, Oct. 5, 1982, 8228423
Int. Cl.[4] B29C *33/52, 45/36, 67/22*
U.S. Cl. 264—46.6 10 Claims



1. A method of making a hollow, one piece head for a golf club of thermoplastics material comprising:

(a) forming a fusible core member of a material having a melting point below the injection temperature of said thermoplastics material and with at least one hole extending through the core member;

(b) placing the core member in a mold of the desired size and shape of the finished article, said mold completely surrounding the core member and supporting the core member within the mold;

(c) injecting said thermoplastics material into said mold to fill both the space around said core member and said hole therethrough;

(d) allowing said thermoplastic material to set so as to form a molding surrounding the core member and at least one internal strut within the molding and corresponding to said hole;

(e) raising the temperature of the mold and core member to a level sufficient to melt the core member but insufficient to melt or deform said thermoplastics material;

(f) removing the melted core material to leave a hollow golf club head with at least one internal strut completely enclosed within the hollow space at a position corresponding to the location of said hole with the molding of the club head completely surrounding strut.

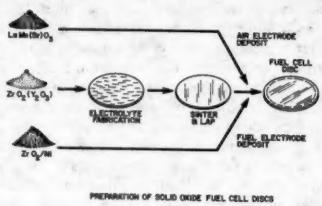
6. The method of claim 1, wherein said moulding is filled with a foam-forming reaction mixture after removal of said fusible core member therefrom.

4,614,628
SOLID ELECTROLYTE STRUCTURE AND METHOD FOR FORMING

Michael S. Hsu, Lincoln, and Charles F. Wilson, Sudbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 382,035, May 26, 1982, abandoned. This application Jul. 16, 1984, Ser. No. 631,010
Int. Cl.[4] C04B *41/87*
U.S. Cl. 264—61 5 Claims

1. The process for forming a solid-oxide electrolyte plate which comprises suspending powders of said oxide in a working gas, passing the suspension through an arc discharged to melt said particles and depositing said molten particle on a flat substrate, allowing said particles to cool and form a solid layer and removing said solid layer from said substrate, sintering said removed solid at a temperature between about 1400° C. and 1600° C., depositing a fuel electrode material on one surface of the sintered solid by flame deposition and depositing an oxidized electrode material on a second surface of the sintered solid, the degree of roughness of the surface of said flat substrate are irregularities between about 0.00032–0.000064 inches in size.

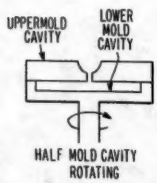


PREPARATION OF SOLID OXIDE FUEL CELL DISCS

4,614,629
ROTATIONAL COMPRESSION PROCESS FOR FORMING LIQUID CRYSTALLINE POLYMERS WITH ULTRA-HIGH MECHANICAL PROPERTIES

James Economy, San Jose, and Anagnostis E. Zachariades, Hillsborough, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 533,083, Sep. 19, 1983, abandoned, which is a continuation of Ser. No. 363,355, Mar. 19, 1982, abandoned. This application Jan. 27, 1984, Ser. No. 574,319
Int. Cl.[4] B29C *41/04*
U.S. Cl. 264—176.1 4 Claims

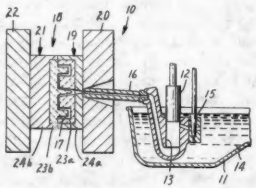


1. A process for forming a polymer of ultra-high mechanical properties, said process comprising the improvement of subjecting an aromatic liquid crystalline copolyester to a compressive force and a rotational force perpendicular to the compressive force in a contained geometry while the copolyester is within the range of from 50 to 10^4 poise in melt viscosity.

4,614,630
MOLD HAVING CERAMIC INSERT, METHOD FOR INJECTION MOLDING USING THE SAME

Arthur W. Pluim, Jr., Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Apr. 2, 1984, Ser. No. 596,067
Int. Cl.[4] B29C *45/14, 33/40*
U.S. Cl. 264—219 3 Claims



1. A method of injection molding comprising the steps of

providing a multi-part mold comprising mold parts being engagable when said mold is closed to define walls of a mold cavity wherein each of said mold parts comprises a mold block portion having a mounting cavity fitted with a mold cavity insert;

fitting under compressive stress within said mounting cavity a mold cavity insert comprising a shaped ceramic body having a mounting surface adapted to fit under compressive stress therein throughout the molding steps;

closing said multi-part mold;

injecting molten material into said mold cavity under injection molding condition, including high pressure;

permitting said molten material in said mold cavity to solidify;

opening said mold; and

removing the molded article.

4,614,631

PROCESS FOR SCREW-CUTTING IN A TUBE OR LINK MADE FROM A COMPOSITE CARBON FIBER BASED MATERIAL COATED WITH POLYMERIZED RESIN

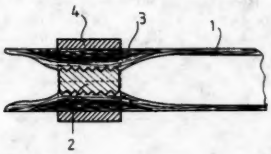
Daniel Daugny, Tournon-sur-Rhone, France, assignor to Societe Financiere & Immobiliere SKF et Cie, St. Vallier, France

Filed Nov. 19, 1984, Ser. No. 672,873

Claims priority, application France, Nov. 18, 1983, 83 18686

Int. Cl.[4] B29C *35/02*

U.S. Cl. 264—258 **4 Claims**



1. A process for forming an internal screw thread in a tube or link made from a composite carbon fiber based material coated with polymerized resin, in which the part of the tube or link comprising the screw thread is inserted in the body of the tube or the link and molded on a threaded mandrel, wherein said part of the tube or link where the screw thread is to be formed is polymerized substantially completely and under pressure on the threaded mandrel so as to obtain a preform comprising a hard internally threaded portion having non polymerized fibers extending lengthwise therefrom, an expandable mandrel is introduced into this preform, said preform is inserted inside a tube of fibers which is already polymerized or to be cured, and finally polymerization under pressure of said lengthwise extending fibers is provided by heating and causing the mandrel to expand so as to bond said lengthwise extending fibers to the fibers of the tube.

4. The process as claimed in claim **1**, wherein layers or tissues of polymerized fibers are disposed on the internally threaded portion, the whole is fitted into a mold of a diameter larger than the outer diameter of the internally threaded portion coated with layers, and an annular bladder is interposed between the layers and the mold at right angles to said internally threaded portion.

4,614,632

METHOD AND APPARATUS FOR CONTINUOUSLY FORMING EMBOSSED SHEETS

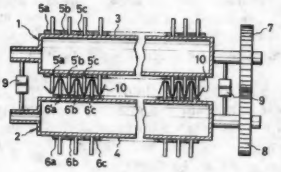
Seiju Kezuka, Yokohama; Tsuneo Yoshimura, Tokyo; Tadayoshi Kato, Yokohama, and Moriya Iida, Yamato, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,582

Claims priority, application Japan, Dec. 30, 1983, 58-250737

Int. Cl.[4] B29C *53/24*

U.S. Cl. 264—280 **13 Claims**



1. In a method for continuously forming embossed sheets by using a forming apparatus, said apparatus provided with a pair of temperature-adjustable forming rolls; a plurality of ring-shaped blocks having a plurality of projections on their respective circumferential surfaces provided on each of said pair of forming rolls; axial distance regulating means for controlling the distance between axes of said pair of forming rolls; and driving means for rotating said pair of forming rolls, in which a sheet is introduced into a space between said pair of temperature-adjustable forming rolls of said forming apparatus in which a sheet is brought into contact with said projections of said forming rolls at a temperature in the range of between ambient temperature and the melting or softening temperature of said sheet, whereby projections of said pair of forming rolls engage each other without effecting pressed contact, thereby causing the sheet to undergo plastic deformation resulting in a plurality of projections on both sides of said sheet, the improvement comprising (a) staggering said ring-shaped blocks composed of fixed and free-shaped blocks on each forming roll such that every fixed ring-shaped block is adjacent only free ring-shaped blocks and every free ring-shaped block is adjacent only fixed ring-shaped blocks and such that every fixed ring-shaped block on the first of said two forming rolls engages a free ring-shaped block on said second forming roll and wherein every free ring-shaped block on said first forming roll engages a fixed ring-shaped block on the second forming roll; and (b) staggering projections on said ring-shaped blocks, as desired, in the circumferential direction relative to said projections of adjacent ring-shaped blocks whereby said plurality of projections are formed in an aligned or staggered position.

5. In an apparatus for continuously forming embossed sheets, said apparatus comprising a pair of parallel forming rolls; a plurality of ring-shaped blocks having a plurality of projections on their respective circumferential surfaces provided on each of said pair of forming rolls; axial distance regulating means for controlling the distance between axes of said pair of forming rolls; and driving means for rotating said pair of forming rolls, the improvement comprising (a) said ring-shaped blocks composed of staggered fixed and free ring-shaped blocks such that each fixed and free block on the first of the two parallel forming rolls are adjacent only free and fixed blocks, respectively, and whereby each free ring-shaped block on said first forming roll engages a fixed ring-shaped block on said second forming roll and each fixed ring-shaped block on said first forming roll engages a free ring-shaped block on said second forming roll; and (b) said projections of one of said ring-shaped block is staggered, as desired, in the circumferential direction relative to the projections of said adjacent ring-shaped blocks.

4,614,633
RELEASE AGENT FOR POLYURETHANE MOLDING COMPOSITIONS

Hans-Horst Steinbach, Bergisch-Gladbach, and Matthias Rieder, Roesrath, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 689,757

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1984, 3401484

Int. Cl.⁴ B28B *7/36*

U.S. Cl. 264—338 **1 Claim**

1. In the production of a molded polyurethane article wherein a mold is coated with a release agent, polyurethane is supplied to the mold, the article is removed from the mold, and additional articles are cast in the mold, the improvement which comprises employing as the release agent a composition comprising about 90 to 97 parts by weight of an organic solvent and about 10 to 3 parts by weight of a TiO group-containing polysiloxane wherein in said TiO group-containing polysiloxane TiO groups are incorporated into the polysiloxane wherein there are about 1 to 100 SiO groups per TiO group in said TiO group-containing polysiloxane.

4,614,634
PROCESS FOR THE PRODUCTION OF PLASTIC FILMS HAVING IMPROVED OPTICAL PROPERTIES

Hans-Leo Weber, Rommerskirchen; Uwe Claussen, Leverkusen, and Hellmut Hannes, Beedenbostel, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 683,075

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1983, 3347684

Int. Cl.⁴ B29C *71/00*

U.S. Cl. 264—341 **6 Claims**

1. Process for the production of an optically virtually isotropic bisphenol A polycarbonte film, characterized in that an optically uniaxial birefringent bisphenol A polycarbonate film is produced in a manner which is known per se, by casting or extrusion, and, in a region close to the surface which corresponds to 10 to 30%, of the total thickness of the film, irreversible relaxation process are then initiated by dipping in a solvent or swelling agent, which results in a molecular reoriented structure being retained after drying of the film, and resulting in the birefringence being eliminated or compensated.

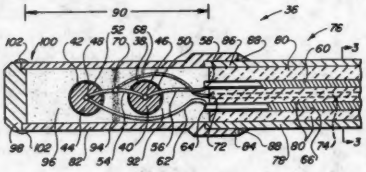
4,614,635
FISSION-COUPLE NEUTRON SENSOR

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 12, 1983, Ser. No. 560,122

Int. Cl.⁴ G01T *3/00*

U.S. Cl. 376—154 **8 Claims**



1. Microtechnology apparatus for measuring the neutron flux level in a flux field having at least gamma rays and neutrons, comprising:

(a) at least a first thermocouple, formed on a substrate, covered at least in part by a fissile material capable of being heated by gamma ray and neutron capture, which in turn heats the first thermocouple to cause it to generate a first signal, which first thermocouple thereby functions as a hot junction;

(b) at least a second thermocouple, formed on said substrate, covered at least in part by a non-fissile material capable of being heated by gamma ray capture, which in turn heats the second thermocouple to cause it to generate a second signal, which second thermocouple thereby functions as a cold junction; and

(c) means for electrically connecting the first and second thermocouples to each other, and to an electrical system which is capable of determining the neutron flux within the flux field from said first and second signals.

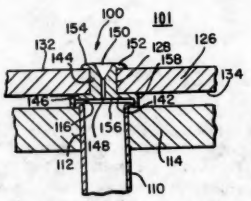
4,614,636
17×17 NUCLEAR FUEL ASSEMBLY THIMBLE TUBE CAP

John M. Walters, Orangeburg, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1984, Ser. No. 569,075

Int. Cl.⁴ G21C *3/10*

U.S. Cl. 376—451 **25 Claims**



1. A nuclear reactor fuel assembly, comprising:

a top nozzle adaptor plate;

a thimble tube, having an open upper end, fixedly secured within said top nozzle adaptor plate;

a holddown assembly base plate disposed in a spaced relationship above said top nozzle adaptor plate; and

means fixedly secured within said holddown assembly base plate and disposed exteriorly of said thimble tube for substantially closing said open upper end of said thimble tube.

4,614,637
PROCESS FOR THE PRODUCTION OF POROUS PRODUCTS MADE FROM BORON OR BORON COMPOUNDS

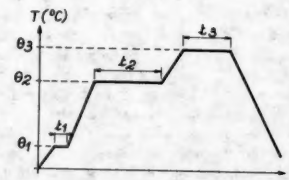
Marcel Boncoeur, Paris; Bernard Hansz, Vert le Petit, and Thierry Lieven, Montrouge, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 24, 1985, Ser. No. 726,728

Claims priority, application France, Apr. 26, 1984, 84 06578

Int. Cl.⁴ B22F *3/10*

U.S. Cl. 419—2 **8 Claims**



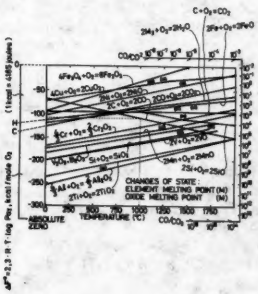
1. A process for the production of porous boron products comprising successively the following stages:

(1) suspending the boron powder in a solution of an alkali metal salt, hydroxide and/or oxide,
(2) then separating the powderfrom the suspension liquid by settling,
(3) drying the thus separated powder to obtain an agglomerated powder, and
(4) subjecting the thus obtained agglomerated powder to at least two heat treatments performed at different temperatures, the final stage of the heat treatment being performed at a temperature of 1500° to 2200° C. and the first stage being performed at a temperature below that of the final stage.

4,614,638
PROCESS FOR PRODUCING SINTERED FERROUS ALLOYS

Nobuhito Kuroishi; Mitsuo Osada, and Akio Hara, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 604,435, May 1, 1984, abandoned, which is a continuation of Ser. No. 255,392, Apr. 20, 1981, abandoned. This application Dec. 6, 1985, Ser. No. 805,413
Claims priority, application Japan, Apr. 21, 1980, 55-53439; Apr. 22, 1980, 55-53813
Int. Cl.⁴ B22F *1/00*
U.S. Cl. 419—39 **19 Claims**

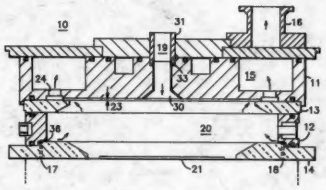


1. A method for producing a sintered ferrous alloy containing at least one alloying element whose standard free energy for oxide formation at 1000° C. is 11,000 cal/g mol O_2 or less and also containing oxygen and carbon which comprises the steps of:
(1) elevating the temperature of a green compact comprising said at least one alloying element, oxygen and carbon, first from room temperature to 800°–900° C. and then from 800°–900° C. to sintering temperature;
(2) sintering in a sintering furnace at said sintering temperature; and
(3) cooling by decreasing the temperature from sintering temperature to room temperature;
wherein the pressure in the sintering furnace is 10^{-1} Torr or less while elevating the temperature from room temperature to 800°–900° C., the pressure in the sintering furnace is maintained at a substantially constant pressure between about 0.2 and 500 Torr by supplying a reducing gas from the time of reaching 800°–900° C. to at least the time of reaching the sintering temperature,
the pressure in the sintering furnace is maintained at a substantially constant value during the sintering step, and
all pressure changes except for the pressure change that occurs at the time of reaching 800°–900° C. during step (1) only occur, if at all, when one process step leads to another process step.

4,614,639
COMPOUND FLOW PLASMA REACTOR

Andreas G. Hegedus, Albany, Calif., assignor to Tegal Corporation, Novato, Calif.

Filed Apr. 26, 1985, Ser. No. 727,937
Int. Cl.⁴ B01J *19/08*; H05H *1/00, 1/24*
U.S. Cl. 422—186.05 **9 Claims**



1. In plasma reactor apparatus including a reaction chamber in which is placed an article to be treated, the improved comprising:
an upper electrode having a central bore therein for supplying gas to flow radially outwardly across said article;
sidewall means for supplying gas to flow radially inwardly across said article;
wherein said central bore terminates in a flared portion in the range of 30 to 60 degrees.

4,614,640
PROCESS OF PRODUCING COPPER (II) HYDROXIDE

Hartmut Ploss, and Jürgen Lehne, both of Hamburg, Fed. Rep. of Germany, assignors to Norddeutsche Affinerie AG, Hamburg, Fed. Rep. of Germany

Filed May 22, 1985, Ser. No. 736,820
Claims priority, application Fed. Rep. of Germany, May 23, 1984, 3419089
Int. Cl.⁴ C01G *3/02*
U.S. Cl. 423—35 **7 Claims**

1. A method of producing copper(II) hydroxide which comprises reacting copper oxychloride in an aqueous suspension with a substance selected from the group consisting of alkali hydroxide and alkaline earth metal hydroxide, adding as a stabilizer agent for the copper (II) hydroxide at least one inorganic silicon compound selected from the group consisting of silicon compounds containing hydroxyl groups in their molecules and silicon compounds forming hydroxyl groups in an aqueous medium, in a quantity of 1 to 10% by weight of the solid copper (II) hydroxide formed; and recovering and washing the said copper (II) hydroxide thus formed.

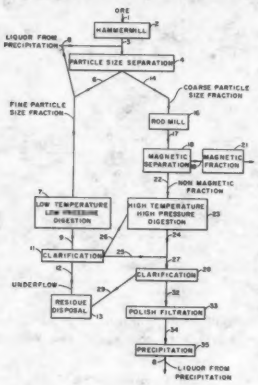
4,614,641
PARALLEL PURIFICATION OF ALUMINA WITH PHYSICAL PRETREATMENT

Donald K. Grubbs, Rector, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 19, 1985, Ser. No. 746,322
Int. Cl.⁴ C01F *7/06*
U.S. Cl. 423—127 **17 Claims**

1. A process for producing alumina from high-silica bauxite containing more than about 5% reactive silica comprising:
(a) separating said bauxite into a coarse fraction of particle size larger than about 150 mesh and a fines fraction of particle size smaller than about 150 mesh (Tyler Series);
(b) digesting said fines fraction in a sodium aluminate solution having a caustic concentration higher than about 240 total caustic on a sodium carbonate basis at a temperature in the range of about 80° C. to about 130° C. to form a first alumina-rich solution;
(c) digesting said coarse fraction in a sodium aluminate solution at temperatures in the range of about 140° C. to

150° C. to form a slurry of a second alumina-rich solution and desilication product (DSP) containing residue;



(d) mixing said first alumina-rich solution and said slurry to desilicate said first solution in contact with said DSP containing residue and to form a combined liquor; and

(e) precipitating out alumina from said combined liquor.

4,614,642

METHOD OF PRODUCING AN ALUMINIUM TRIHYDROXIDE WITH A LARGE, EVEN PARTICLE SIZE

Benoît Cristol, and Jacques Mordini, both of Aix-en-Provence, France, assignors to Aluminum Pechiney, Paris, France

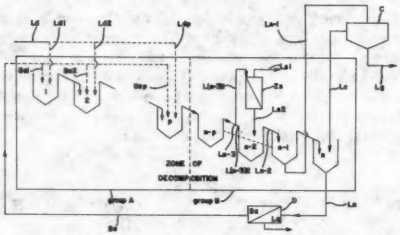
PCT No. PCT/FR84/00195, § 371 Date Jun. 6, 1985, § 102(e) Date Jun. 6, 1985, PCT Pub. No. WO85/01040, PCT Pub. Date Mar. 14, 1985

PCT Filed Sep. 4, 1984, Ser. No. 747,045

Claims priority, application France, Sep. 5, 1983, 83 14294

Int. Cl.[4] C01F *7/06*

U.S. Cl. 423—127 **9 Claims**



1. In a process for the decomposition of a supersaturated alkali metal aluminate solution produced by means of the Bayer process of alkaline attack on bauxites by the introduction of an amount of aluminum trihydroxide seed of non-selected particle size into a decomposition zone having "n" stages in a cascade configuration, such that a suspension having a proportion of dry matter of at least 700 g/l of alkali metal aluminate solution is produced in at least one of said "n" stages, the improvement comprising forming a separation zone (Z_s) between two of said "n" stages, supplying to said separation zone at least part of the flow of suspension circulating in the decomposition zone, extracting a fraction L_{S1} from the suspension in said separation zone, said fraction L_{S1} containing at least 5% of the total number of fine particles of aluminum trihydroxide having a maximum diameter of 40 microns which are present in the suspension circulating in the decomposition zone, reducing the number of fine particles in said fraction by at least 50%, and then recycling the fraction having the reduced number of fine particles to at least one stage of the Bayer process the process achieving the production of a product aluminum trihydroxide having a large even particle size of which 10% at most of the particles produced have their smallest dimension below 45 microns.

4,614,643

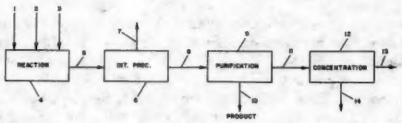
PROCESS FOR TREATING LIQUID CHLORINATED HYDROCARBON WASTES CONTAINING IRON

Elliott P. Doane, Monroe, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 8, 1982, Ser. No. 447,840

Int. Cl.[4] C01G *49/10*

U.S. Cl. 423—140 **7 Claims**



1. A process for reducing the ferric chloride content of liquid waste streams comprising higher boiling chlorinated hydrocarbons and containing amounts of ferric chloride, consisting essentially of contacting the waste stream with an amount of water sufficient to convert ferric chloride contained in said stream to solid ferric chloride hexahydrate, and then removing the solid hexahydrate by filtration or centrifugation from the waste stream.

4,614,644

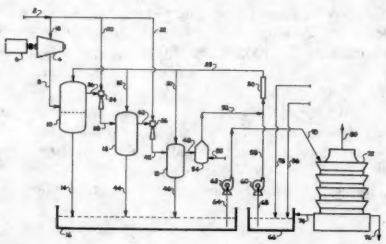
PROCESS FOR REMOVAL OF H_2S FROM GEOTHERMAL STEAM AND THE CONVERSION TO SOLUBLE SULFUR COMPOUNDS

Robert D. Lampton, Jr., and Thomas M. Hopkins, II, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 13, 1985, Ser. No. 776,062

Int. Cl.[4] C01B *17/05*; B01D *53/54*

U.S. Cl. 423—226 **9 Claims**



1. A process for removing H_2S from a fluid stream containing H_2S which comprises

(A) contacting said H_2S stream in a first reaction zone with an aqueous solution at a pH range suitable for removing H_2S whereby said solution comprises

(1) at least one ferric chelate,

(2) an oxidizing agent capable of oxidizing elemental sulfur to solutble sulfur compounds, and

(3) one or more water soluble cationic polymeric catalysts whereby the converstion of free sulfur to soluble sulfur compounds is accelerated by the presence of said catalysts and said ferric chelate is reduced to a ferrous chelate

(B) contacting said solution containing ferrous chelate in a

second reaction zone with an oxygen containing gas stream whereby said chelate is reoxidized and

(C) recirculating said reoxidized solution back to said first reaction zone.

4,614,645

METHOD FOR TREATING EFFLUENT IN EXHAUST GAS TREATING APPARATUS

Kenichi Yoneda; Masato Miyake; Kenzo Muramatsu, all of Tokyo, and Atsushi Tatani, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

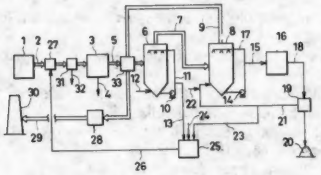
Filed Aug. 7, 1984, Ser. No. 638,513

Claims priority, application Japan, Aug. 12, 1983, 58-147857

Int. Cl.⁴ C01B *7/00, 17/00;* **B01D** *19/00*

U.S. Cl. 423—240 **2 Claims**

PRIOR ART



1. A method for treating and reducing amounts of an effluent produced in an exhaust of stack gas from a coal-fire boiler, which method comprises the steps of:

(a) introducing an exhaust gas, having harmful components of at least one of sulfur oxide, a halogen gas, and suspended dust material therein, into a dry dust collector where said dust contained in said exhaust gas is removed, said halogen gas being either fluorine or chlorine;

(b) conveying said exhaust gas from said dry dust collector to a wet exhaust gas treating device where said exhaust gas is cleaned;

(c) pouring said effluent produced in said wet exhaust gas treating device into a stream above said dry dust collector;

(d) adjusting an amount of said effluent from said wet exhaust gas treating device by an adjusting meter in accordance with a determined concentration of said halogen gas, or said suspended dust material in said effluent from said wet exhaust gas treating device, said adjustment being made such that a concentration of chlorine reaches a range of 5,000 to 20,000 ppm, a concentration of fluorine reaches a range of 1,000 to 5,000 ppm and a concentration of suspended dust material becomes 1 to 5 wt %; and

(e) neutralizing said waste solution to pH of 8.0.

4,614,646

STABILIZATION OF PEROXIDE SYSTEMS IN THE PRESENCE OF ALKALINE EARTH METAL IONS

Steven H. Christiansen, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1984, Ser. No. 686,111

Int. Cl.⁴ C01B *15/02*

U.S. Cl. 423—272 **20 Claims**

1. In a method of inhibiting decomposition of hydrogen peroxide in aqueous solution wherein a chelant is employed the improvement which consists essentially of adding to said solution

(a) an aminophosphonic acid chelant or an ammonium, alkali metal or amine salt thereof together with

(b) at least one polymer of

(1) an unsaturated carboxylic acid or an ammonium, alkali metal or amine salt thereof,

(2) an unsaturated carboxylic amide or

(3) an unsaturated carboxylic amide wherein the amide hydrogens are substituted with an alkylsulfonic acid group or an ammonium, alkali metal or amine salt thereof

and wherein the (b) additive may contain a combination of said functional groups.

4,614,647

STABILIZED SODIUM DITHIONITE FORMULATIONS CONTAINING INERT ORGANIC LIQUIDS, AND THE USE OF THESE FORMULATIONS

Max Appl, Dannstadt-Schauernheim; Gerhard D. Molin; Wilhelm Goesele, both of Wachenheim; Siegfried Schreiner, Ludwigshafen, and Gert Treiber, Worms, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 12, 1984, Ser. No. 660,390

Int. Cl.⁴ C01B *17/66;* **B01D** *19/00;* **C09K** *3/00*

U.S. Cl. 423—515 **4 Claims**

1. A stabilized sodium dithionite formulation containing inert organic liquids wherein the formulations has the consistency of a pumpable paste, said formulation consisting essentially of 77 to 90% by weight sodium dithionite and inert organic liquids and said organic liquids being selected from alcohols, esters, ethers and/or hydrocarbons.

4,614,648

PROCESS FOR MANUFACTURING EFFERVESCENT GRANULES AND TABLETS

Jean Bru, 24 Rue Raphael, Paris 75016, France

PCT No. PCT/FR83/00253, § 371 Date Aug. 20, 1984, § 102(e) Date Aug. 20, 1984, PCT Pub. No. WO84/02468, PCT Pub. Date Jul. 5, 1984

PCT Filed Dec. 20, 1983, Ser. No. 643,980

Claims priority, application France, Dec. 21, 1982, 82 21476; Nov. 30, 1983, 83 19143

Int. Cl.⁴ A61L *9/04;* **B01F** *3/12;* **C06D** *5/10*

U.S. Cl. 424—44 **9 Claims**

1. A process for the manufacture of effervescent tablets in which the powdered raw materials therefor are mixed and the mixture is carefully humidified by a solvent followed by granulation and drying, wherein the steps of mixing said raw materials, humidifying the mixture with the solvent and drying are conducted inside the same apparatus, wherein the drying step is performed in vacuo.

4,614,649

ANTIPLAQUE SACCHARIN SALT DENTRIFICES AND METHOD OF USE THEREOF

William G. Gorman, East Greenbush; Karl F. Popp, Schodack, and Kenneth M. Mavica, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

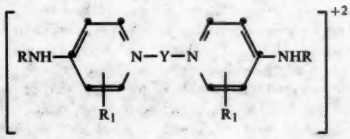
Filed Dec. 9, 1983, Ser. No. 560,059

Int. Cl.⁴ A61K *7/22*

U.S. Cl. 424—54 **10 Claims**

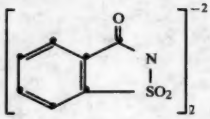
1. An antiplaque dentifrice comprising

(A) an effective dental plaque inhibiting, reducing or preventing amount of a compound having the structural formula



Formula IV

-continued



wherein Y is alkylene containing from 4 to 18 carbon atoms and separating the two 4-(R-amino)-1-pyridinium groups by from 4 to 18 carbon atoms; R is the same in both occurrences and is alkyl containing from 6 to 18 carbon atoms, cycloalkyl containing from 5 to 7 carbon atoms, benzyl or phenyl substituted by methylenedioxy or one or two substituents selected from the group consisting of halo, lower-alkyl, lower-alkoxy, nitro, cyano and trifluoromethyl; and R_1 is the same in both occurrences and is hydrogen or lower-alkyl;

(B) a polishing agent or thickening agent selected from the group consisting of silicon dioxide, silicic acid silica, amorphous silica, precipitated silica, hydrated silica, silica hydrate, silica gel, silica xerogel and hydrous silica gel; and

(C) a foaming agent selected from the group consisting of N-alkanoylsarcosine or N-alkenoylsarcosine or an alkali metal, ammonium or alkanolamine salt thereof, wherein alkanoyl or alkenoyl has from 8 to 18 carbon atoms and alkanol has from 2 to 3 carbon atoms.

4,614,650

CYTOTOXIC COMPOSITION INCLUDING AT LEAST AN IMMUNOTOXINE AND AN AMINE

Franz Jansen, Assas, and Pierre Gros, Montpellier, both of France, assignors to Sanofi, Paris, France

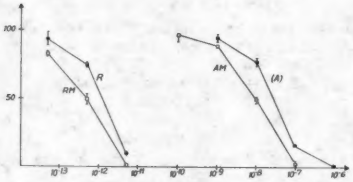
PCT No. PCT/FR83/00043, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983, PCT Pub. No. WO83/03200, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 7, 1983, Ser. No. 557,148

Claims priority, application France, Mar. 11, 1982, 82 04119

Int. Cl.[4] A61K *39/00*

U.S. Cl. 424—85 **4 Claims**



1. A cytotoxic composition comprising a cytotoxic amount of an immunotoxin and 10 mg to 2 g of an amine of the formula R_1NHR_2 in which R_1designates hydrogen or lower alkyl and R_2 designates lower alkyl, or the formula R_1NHR_2 represents 1-aminoadmantane, said amine being used in the form of the amine or a pharmcentically acceptable amine scale, said immunotixin comprising the A chain of ricin covalently bonded to an antibody or an antibody fragment directed against an antigen in the cell to be destroyed.

4,614,651

INTERFERON EPSILON

Allan P. Jarvis, Jr., Newburyport, and David I. Kosowsky, Newton, both of Mass., assignors to Damon Biotech, Inc., Needham Heights, Mass.

Continuation-in-part of Ser. No. 397,610, Jul. 12, 1981, abandoned. This application Jul. 6, 1984, Ser. No. 628,327

Int. Cl.[4] A61K *45/02*; C12P *21/00*

U.S. Cl. 424—85 **13 Claims**

1. An interferon preparation having antiviral activity, said preparation being characterized in that:

(i) it is made by a living cell containing a gene active in human epithelial cells;

(ii) its antiviral activity is specific to human epithelial cells;

(iii) it is antigenically distinct from interferon alpha, interferon beta, and interferon gamma;

(iv) its antiviral activity is stable at pH 2 and is destroyed by proteolytic enzymes; and

(v) it has no detectable antiviral activity in human fibroblast cells.

6. A process for producing an interferon comprising the steps of:

A. producing a culture of living cells containing a gene active in human epithelial cells;

B. incubating said cells in a medium under conditions to promote synthesis of interferon;

C. harvesting said medium; and

D. purifying an interferon from said medium, said interferon being characterized in that

(i) its antiviral activity is specific to human epithelial cells;

(ii) it is antigenically distinct from interferon alpha, interferon beta, and interferon gamma;

(iii) its antiviral activity is stable at pH 2 and is destroyed by proteolytic enzymes, and

(iv) it has no detectable antiviral activity in human fibroblast cells.

4,614,652

COMPOSITIONS FOR THE POST-TREATMENT OF SEBORRHEAL, ACNEIFORM PROCESSES AND A PROCESS FOR THE PREPARATION THEREOF

Gabriella Vályi, and Éva Kutassy, both of Debrecen, Hungary, assignors to Delta Vas-, Muanyag- ES Szolgaltato Ipari Szovetkezet, Tatabanya, Hungary

Filed Sep. 17, 1984, Ser. No. 651,608

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 **11 Claims**

1. A process for the preparation of a paint suitable for the post-treatment of seborrheal, acneiform processes, which comprises the steps of:

(a) adding to 1000 parts by weight of apple brandy or gooseberry brandy of 40–50% alcohol content
10 to 40 parts by weight of dried chamomile,
10 to 40 parts by weight of dried St. John's wort, then allowing the mixture to stand for 7–14 days and filtering,

(b) adding to 1000 parts by weight of apple brandy or gooseberry brandy of 40–50% alcohol content or to a mixture of any ratio of these brandies 100 to 500 parts by weight of propolis, then allowing the mixture to stand for 7 to 14 days and filtering, and

(c) mixing the drug extract according to (a) and the propolis extract according to (b) together in a volume ratio of 60:40 to 80:20 and adding to the thus-obtained mixture 1 to 5% of a ceratoplastic additive.

4. A cosmetic composition in the form of a paint for the post-treatment of seborrheal, acneiform processes, which comprises:

(a) an extract of 10 to 40 parts by weight of dried chamomile and 10 to 40 parts by weight of dried St. John's wort in 1000 parts by weight of apple brandy or gooseberry brandy of 40 to 50% alcohol content as component (a);

(b) an extract of 100 parts to 500 parts by weight of propolis in 1000 parts by weight apple brandy or gooseberry

brandy of 40 to 50% alcohol content at a pH of about 7 as component (b); and

(c) a ceratoplastic agent as component (c); wherein component (a) and component (b) are present in a weight ratio of 60:40 to 80:20, and wherein the ceratoplastic agent constitutes 1 to 5% by weight of the composition.

4,614,653

MILK REPLACER AND METHOD OF FEEDING

Madhu Kakade, Falcon Heights, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 516,454, Jul. 26, 1983, abandoned. This application May 2, 1985, Ser. No. 730,319

Int. Cl.[4] A23K *1/08*

U.S. Cl. 426—2 13 Claims

1. An improved, shelf-stable, flowable liquid milk replacer concentrate of non-heat denatured milk whey protein, sugar, and fat or oil, said concentrate for monogastric animals comprising about 10 to about 45 percent sugars, including about 10 percent to about 35 percent lactose or its monosaccharide hydrolysis products plus up to about 35 percent additional monosaccharides or disaccharides or mixture thereof; about 10 percent to about 16 percent proteins, of which at least about 60 percent are non-heat denatured milk serum proteins; about 1 percent to about 25 percent fat or oil; an emulsifier in an amount sufficient to emulsify the fat or oil in the concentrate, said fat or oil being emulsified in said concentrate; said milk replacer concentrate having a total solids content of from about 50 percent to about 75 percent, a viscosity of between about 100 and about 5000 centipoises, a pH between about 4.0 and about 7.0 and a water acitvity of between about 0.7 and about 0.87, said concentrate providing a complete nutrient source for monogastric animals, whereby it may be fed to animals subsequent to dilution with water to an appropriate consistency.

4,614,654

TAFFY-LIKE CHEWING GUM CONFECTION AND METHOD

Ronald L. Ream, N. Aurora; David M. Moore, Wheaton, and Christine L. Corriveau, Orland Pk., all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Aug. 24, 1984, Ser. No. 643,952

Int. Cl.[4] A23G *3/30*

U.S. Cl. 426—5 31 Claims

1. A substantially homogeneous taffy-like chewing gum confection with extended flavor and sweetness release characteristics which comprises gum base dispersed in a matrix of a pliable and substantially non-crystalline taffy composition comprising carbohydrate syrup having a moisture level within the range of from about 7% to about 15% by weight of the syrup, wherein the gum base constitutes from about 5% to about 30% by weight of the confection.

4,614,655

PROCESS FOR THE PREPARATION OF SALT-FREE PICKLED VEGETABLES

Tomiko Hashino, Nara, and Ichie Omura, Hirakata, both of Japan, assignors to Hashino Yakuhin, Ltd., Osaka, Japan

Filed Mar. 5, 1985, Ser. No. 708,220

Claims priority, application Japan, Mar. 7, 1984, 59-43252

Int. Cl.[4] A23B *7/10*

U.S. Cl. 426—49 6 Claims

1. A process for the preparation of salt-free pickled vegetables which comprises adding to a vegetable to be pickled a pickling agent consisting of strained lees obtained by brewing natural rice vinegar, and effective amounts of a sweetening material and an acid-neutralizing agent and placing the vegetable at a temperature of about 0° C.–10° C. for a period of time sufficient to produce a pickled product.

4,614,656

TWO PHASE MARGARINE

Josef Tennikat, Delmenhorst, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed May 14, 1985, Ser. No. 733,686

Claims priority, application United Kingdom, May 14, 1984, 8412298

Int. Cl.[4] A23D *5/00, 5/02;* A23L *1/105*

U.S. Cl. 426—61 6 Claims

1. A baking composition wherein margarine is segregated from other baking ingredients in a composite product comprising margarine and a water-free fatty phase wherein the margarine comprises a continuous fat phase and an aqueous phase dispersed therein and the water-free fatty phase comprises a fat in which said baking ingredients are dispersed therein, and wherein the margarine and water-free fatty phase are combined in said composite body to provide a substantially uniform cross-sectional area in which the margarine constitutes a major proportion of the area and the water-free fatty phase constitutes the remaining minor proportion of said area which is distinct and separate from the margarine and the water-free fatty phase provides protection for the baking ingredient which may be adversely affected by water.

4,614,657

DIPEPTIDE SWEETENED READY-TO-EAT CEREAL AND COATING METHOD

Yung-Bool D. Sheng, Hanover Park, and Warren A. Widicus, Bartlett, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sep. 11, 1984, Ser. No. 649,518

Int. Cl.[4] A23L *1/34*

U.S. Cl. 426—96 12 Claims

1. A stable, sweet coated ready-to-eat cereal comprising:

(a) a ready-to-eat cereal base having a dextrin coating;

(b) a dipeptide sweetener in an amount in the range of about 0.05% to 0.5% of the weight of the ready-to-eat cereal base; and

(c) an edible acid selected from the group consisting of mono-, di- and tri-carboxylic acids which have at least one pK_a in the range of about 3.0 to 6.0 in an amount of acid (as determined by the following formulas) in the range of about

$$W_A = .25 \times \frac{MW_A \times W_{DS}}{MW_{DS} \times N_A}$$

to about

$$W_A = 1.00 \times \frac{MW_A \times W_{DS}}{MW_{DS} \times N_A}$$

where W_A is the weight % of acid on the ready-to-eat cereal, W_{DS} is the weight % of dipeptide sweetener on the ready-to-eat cereal, MW_A is the molecular weight of the dipeptide sweetener and N_A is the number of hydrogens in the acid with pK_a's in the range of about 3.0 to 6.0, wherein the dipeptide sweetener and the edible acid are intermingled in a coating on the ready-to-eat cereal base.

4,614,658
FILLED SUGAR CANDIES AND A METHOD OF REMELTING AND REMOLDING SUCH CANDIES TO PRODUCE HOME MADE MOLDED HARD SUGAR CANDIES

James E. Wilson, Glen Ellyn, and Alexander J. Chalmers, Mount Prospect, both of Ill., assignors to Peerless Confection Company, Chicago, Ill.

Filed Feb. 22, 1985, Ser. No. 704,640
Int. Cl.[4] A23G 3/00
U.S. Cl. 426—103 12 Claims

1. A filled sugar candy adapted specifically to be melted in home kitchens and poured into candy molds for use in producing homogeneous home molded hard sugar candies,
such filled sugar candy consisting of a hard sugar candy outer shell,
and a center filling encased directly within the outer shell and consisting of a viscous liquid sugar syrup,
such syrup consisting of a water content ranging from 19 to 23 percent by weight,
the remainder of such syrup consisting essentially of sugars, with essentially no acid content,
such hard sugar candy outer shell consisting essentially of sugars and a low water content less than approximately two percent by weight and with essentially no acid content.

4,614,659
METHOD FOR TREATING PINEAPPLES

Yuan K. Liu, Concord, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

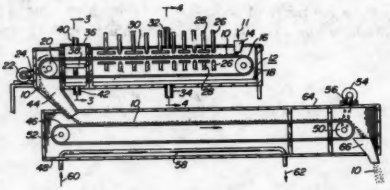
Filed Apr. 1, 1985, Ser. No. 718,790
Int. Cl.[4] A23B 7/00
U.S. Cl. 426—321 12 Claims

1. A method for prolonging the fresh appearance of freshly harvested pineapples which comprises treating the crowns of the pineapples with sufficient amounts of a gibberellin to retard withering and senescence of the crowns.

4,614,660
PROCESS FOR PRODUCING QUICK COOKING VEGETABLES

Bjarne Weibye, Oslo, Norway, assignor to Apothekernes Laboratorium A.S., Oslo, Norway

Continuation of Ser. No. 414,140, Sep. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 298,676, Sep. 2, 1981, Pat. No. 4,385,074. This application Mar. 1, 1985, Ser. No. 707,181
Int. Cl.[4] A23L 1/20; A23B 7/02
U.S. Cl. 426—461 6 Claims

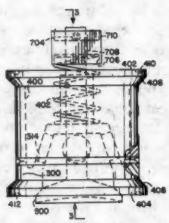


1. A continuous process for producing a quick cooking vegetable comprising:
(a) spraying moisture and steam on discrete pieces of a vegetable that contains carbohydrates as said vegetable moves along on a conveyor belt until the vegetable attains a moisture content of between about 50 weight percent and about 97 weight percent and a resultant temperature of between about 72° C. and about 110° C. such that the vegetable pieces are completely gelatinized,
(b) pre-drying the vegetable pieces by hot air at velocities ranging between about 100 m/s and about 140 m/s to a moisture content of between about 20 weight percent and about 30 weight percent, and
(c) finally drying the vegetable pieces by hot air at velocities ranging between about 75 m/s and about 110 m/s to a final moisture content between about 5 weight percent and about 15 weight percent.

4,614,661
METHODS AND APPARATUS FOR SANITARY STEAM INJECTION

Donnie R. White, Lawrenceville; David F. Hobgood, Winder, both of Ga.; Larry E. Swim, Dunkirk, N.Y., and Leo D. Staley, Glenview, Ill., assignors to Kraft, Inc., Glenview, Ill.

Filed Mar. 21, 1985, Ser. No. 714,627
Int. Cl.[4] A23L 3/18; F16K 15/00
U.S. Cl. 426—511 5 Claims



5. A method for heating a viscous food product comprising the steps of continuously pumping the viscous food product through a steam injection zone at elevated pressure,
continuously injecting steam into the viscous food product in said zone through a sanitary steam check valve comprising a cylindrical steam inlet conduit, first connection means for compressively connecting said inlet conduit in abutting relationship to a steam supply conduit, a cylindrical valve seat body integrally joined with said cylindrical steam inlet conduit distally of said first connection means, said valve seat body comprising a cylindrical wall section, a valve seat section distally of said inlet conduit, a substantially radially symmetrical frustoconical wall section positioned internally of said cylindrical wall section forming with said cylindrical wall section, and said valve seat section, a steam discharge chamber within the cylindrical valve seat body,
a valve bearing sleeve positioned along the rectilinear axis of the cylindrical valve seat body, said valve bearing sleeve having a plurality of at least three rectilinear guiding surfaces for providing rectilinear motion along the axis of said cylindrical conduit and having a length of at least about 2 times its largest cross-sectional dimension,
a valve element comprising a valve head, a valve stem projecting through said valve bearing sleeve and extending beyond the valve bearing sleeve a distance of at least about 60 percent of the length of the valve bearing sleeve, a valve compression spring coil having an outside diameter of less than about 50 percent of the internal diameter of the cylindrical wall section surrounding the outer wall of the valve bearing sleeve, said frustoconical wall section having a plurality of passageways for transmitting steam between the zone internally of said cylindrical steam inlet conduit to the steam discharge zone, a spring compression retention element positioned on said valve stem at its distal end opposite said valve head and having a first recess in its face adjacent said distal valve stem end and a second recess in its face adjacent said compression spring coil, one end of said compression spring coil being positioned within said second recess, a transverse interlocking compression fastener positioned within a smooth bore in said

valve stem adjacent said distal end, said transverse fastener being positioned within said first recess, said valve compression spring coil being compressed between the rearward face of said frustoconical wall section and said second recess to lock said transverse interlocking fastener in said first recess, and

periodically disassembling said valve for cleaning by compressing said spring retention element against said spring coil to disengage the transverse fastener from the spring retention element, removing the transverse fastener from the valve stem, and removing the valve spring retention element and spring coil from the valve stem, and

subsequently reassembling the steam valve.

4,614,662

FAST COOK-CONTINUOUS PROCESS FOR PRODUCTION OF AMMONIA CARAMEL COLOR

Setlur R. Ramaswamy, Louisville, Ky., assignor to D.D. Williamson & Co., Inc., Louisville, Ky.

Filed Aug. 26, 1985, Ser. No. 769,611

Int. Cl.[4] A23G *3/32*

U.S. Cl. 426—540 **30 Claims**

1. A continuous method of preparing ammonia caramel comprising forming a flowing stream of carbohydrate syrup, said syrup comprising water and carbohydrates;

heating said flowing stream of carbohydrate syrup to a temperature above the boiling temperature of said syrup at ambient pressure;

maintaining said stream of syrup at an elevated pressure effective to maintain said water at the liquid state;

introducing an amount of an ammonia caramelization catalyst effective to cause caramelization of said stream at said temperature to form a mixture of syrup and catalyst by introducing less than said amount of catalyst at each of a plurality of locations along said stream;

maintaining said mixture of syrup and catalyst at said elevated pressure for a period of time effective to form caramel coloring.

4,614,663

FAT COMPOSITIONS

Arthur W. T. Rule, Westbourne, Near Emsworth, England, assignor to John Wyeth & Brother Ltd., Maidenhead, England

Continuation of Ser. No. 619,868, Jun. 12, 1984, abandoned. This application May 3, 1985, Ser. No. 730,269

Claims priority, application United Kingdom, Jun. 24, 1983, 8317248

Int. Cl.[4] A23D *5/00*

U.S. Cl. 426—601 **9 Claims**

1. A food product adapted for human infant nutrition containing a protein source, a carbohydrate, and a fat composition comprising:

(a) palm oil;

(b) olive oil or oleic oil;

(c) an oil selected from the group consisting of coconut oil, babassu oil and plam kernel oil;

(d) 22 to 24% calculated on the weight of the fat composition, of one or two oils selected from the group consisting of soybean oil, corn oil, sunflower seed oil, cottonseed oil and safflower oil of which cottonseed oil is present in the amount of 22% of the weight of the fat composition, and

(e) 0 to 2%, calculated on the weight of the fat composition, of a lecithin; the amounts of the oils being such that the fat composition contains, per 100 parts by weight of fatty acids,

(i) 18 to 20 parts by weight of linoleic acid;

(ii) 28 to 44 parts by weight of oleic acid;

(iii) 7 to 25 parts by weight of the sum of lauric and myristic acids; and

(iv) 18 to 26 parts by weight of the sum of palmitic and stearic acids.

4,614,664

PROCESS OF PREPARING INSTANT, FLAKED, WHEAT FARINA

Jan Karwowski, Franklin Lakes, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 531,983, Sep. 14, 1983, Pat. No. 4,551,347. This application Jul. 2, 1985, Ser. No. 751,049

The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.

Int. Cl.[4] A23L *1/164*

U.S. Cl. 426—621 **1 Claim**

1. Dry, instant, cereal grain farina-like product in flake form produced by the process comprising:

(a) admixing cereal grain farina material and 0.5 to 3 weight percent of guar gum in powder form, based on the total dry weight of the mixture of the guar gum and the cereal grain farina material;

(b) impregnating homogeneous mixture (a) with a sufficient amount of water to saturate mixture (a);

(c) tempering mixture (b) to produce a material at uniform moisture;

(d) cooking tempered material (c) sufficiently at 110° C. to 120° C. to gel the starch present in the cereal grain farina, the average particle size of the mixture (c) being increased thereby;

(e) reducing the average particle size of cooked material (d), cooked material (d) being in particular form;

(f) drying particulate, cooked material (e);

(g) tempering mixture (f) to provide a uniform mixture content throughout mixture (f); and

(h) flaking, tempered particulate material (g) to form a dry product in flake form, the dry flake product being capable of being readily rehydrated to have the texture and flavor characteristic of cooked cereal grain farina.

4,614,665

SOYBEAN PROCESSING

Inosuke Furuya, and Hideo Yamazaki, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Okawara Seisakusho, Shizuoka, Japan

Continuation of Ser. No. 654,321, Sep. 25, 1984, abandoned. This application Feb. 19, 1986, Ser. No. 831,668

Claims priority, application Japan, Sep. 28, 1983, 58-181108

Int. Cl.[4] A23L *1/211*

U.S. Cl. 426—634 **3 Claims**

1. A method of processing soybeans in the absence of added water, consisting of breaking raw or green soybeans into pieces, heating said broken raw or green soybeans with superheated steam at a temperature of 120°–200° C. and at atmospheric pressure for a time effective to avoid development of grassy odor while maintaining a satisfactory nitrogen solubility index, and cooling the resulting beans by exposure to the air whereby the beans are free of grassy odor and have at least 80% Nitrogen Solubility Index.

4,614,666

SEMI-CONDUCTOR DEVICE WITH SANDWICH PASSIVATION COATING

Timothy M. Lindenfelser, Eagan, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 7, 1985, Ser. No. 699,028

Int. Cl.[4] H01L *21/316*

U.S. Cl. 427—39 **4 Claims**

1. In a method of making a semiconductor device comprising

(1) selecting a silicon base and then forming, on the surface thereof at least one functional semi-conductor area separated from surrounding areas by an isolation barrier,

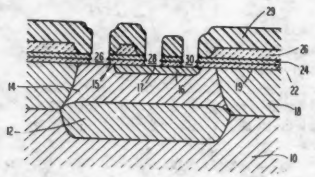
(2) forming a passivation coating thereon and etching said passivation coating to form contact areas at preselected locations therein and

(3) depositing metal in said contact area and in a preselected

pattern over said passivation coating to form at least one conductive lead forming an electrical path from one of said contact areas, the improvement comprising forming said passivation layer by

(a) forming a thin silica layer of 300–500 Å thickness on the surface of said device,

(b) forming a nitride layer overlying said thin silica layer and



(c) forming a second silica layer of 2400–3000 Å thickness over said nitride layer; the thickness of said thin silica layer and the characteristics of said etching process adapted to substantially eliminate the adverse effects of undercut of said nitride layer by excessive etching of said thin silica layer.

4,614,667

COMPOSITE LOW SURFACE ENERGY LINER OF PERFLUOROPOLYETHER

James M. Larson, Minneapolis, and Allen L. Noreen, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 612,475, May 21, 1984, Pat. No. 4,567,073, which is a continuation-in-part of Ser. No. 394,534, Jul. 2, 1982, abandoned. This application Nov. 12, 1985, Ser. No. 796,875

Int. Cl.[4] B05D *3/06, 5/10*

U.S. Cl. 427—54.1 **9 Claims**

1. Method of making a substrate with a liner, comprising the steps of

(a) coating onto the substrate a first dilute solution of polymerizable, film-forming monomer having a polymerizable functionality greater than 1 to provide an inner coating,

(b) coating over the coating of step (a) a second dilute solution of a polymerizable, film-forming, monomer copolymerizable with the monomer of said first solution and comprising a perfluoropolyether segment which comprises a plurality of $-C_aF_{2a}O-$ repeating units, where subscript a in each such unit is independently an integer from 1 to 4, thus providing an outer coating,

(c) drying said coatings and copolymerizing said momoners.

4,614,668

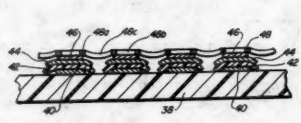
METHOD OF MAKING AN ELECTROLUMINESCENT DISPLAY DEVICE WITH ISLANDS OF LIGHT EMITTING ELEMENTS

Mark Topp, and Sam Hadden, both of Miami, Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Jul. 2, 1984, Ser. No. 627,284

Int. Cl.[4] H05B *33/10, 33/12;* **B05D** *5/06*

U.S. Cl. 427—66 **24 Claims**



1. A method of making an electroluminescent display comprising a matrix of individual light-emitting elements in a row and column formation and adapted for excitation from a voltage supply which addresses the matrix, which comprises the steps of:

providing a plurality of first electrical conductors overlying a substrate with each first electrical conductor forming a column;

screen printing a plurality of spaced polymer dielectric islands overlying the first conductors, with each dielectric island corresponding to an individual light-emitting element;

screen printing a plurality of spaced polymer light-emitting phosphor islands overlying the dielectrics; and

screen printing a plurality of second electrical conductors overlying said polymer phosphor islands in a direction transverse the direction of the first conductors, with each of said second electrical conductors forming a row;

whereby voltage excitation by the voltage supply across a selected first electrical conductor and second electrical conductor will cause light emission by the light-emitting element at the excited row-column intersection.

4,614,669

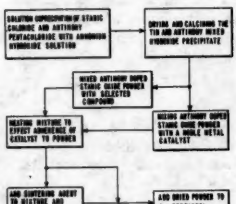
ANTIMONY-DOPED STANNIC OXIDE THICK FILM GAS SENSOR

Lymperios N. Yannopoulos, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 567,453, Dec. 30, 1983. This application Sep. 18, 1985, Ser. No. 777,123

Int. Cl.[4] B05D *5/12*

U.S. Cl. 427—87 **22 Claims**


SOLUTION CO-PRECIPITATION OF STANNIC CHLORIDE AND ANTIMONY PENTACHLORIDE WITH AMMONIUM HYDROXIDE SOLUTION
DRYING AND CALCINING THE TIN AND ANTIMONY MIXED HYDROXIDE PRECIPITATE
MIXED ANTIMONY DOPED STANNIC OXIDE POWDER WITH SELECTED COMPOUND
HEATING MIXTURE TO EFFECT ADHERENCE OF CATALYST TO POWDER
MIXING ANTIMONY DOPED STANNIC OXIDE POWDER WITH A NOBLE METAL CATALYST
ADD SINTERING AGENT TO MIXTURE AND HEATING
ADD MIXED POWDER TO α-TERPINEOL
DRYING THE APPLIED PASTE TO FORM GAS DETECTING ELEMENT
APPLY PASTE TO SUBSTRATE

1. A method of preparing an antimony-doped stannic oxide gas detecting film device responsive to combustible constituents in an environment of interest comprising the steps of:

solution co-precipitation of tin and antimony mixed hydroxide from an admixture of stannic chloride liquid, antimony pentachloride liquid and an ammonium hydroxide solution;

drying and calcining said tin and antimony mixed hydroxide precipitate, thus rendering an antimony-doped stannic oxide powder;

intimately mixing said powder with a noble metal catalyst compound;

heating said intimate admixture to effect a good adherence of said catalyst to said powder;

adding a sintering agent to said admixture and heating;

mixing said admixture with an organic volatile liquid as a preparation to form a paste;

applying said paste to a non-conductive substrate; and

drying said applied paste to form an antimony-doped stannic oxide gas detecting film.

4,614,670

METHOD FOR INSULATING A MAGNET WIRE WITH AN AROMATIC TITANATE MODIFIED NYLON

Francois A. Lavallee, Fort Wayne, Ind., assignor to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 758,913, Jul. 25, 1985, Pat. No. 4,588,784.
This application Oct. 7, 1985, Ser. No. 785,297
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—118 4 Claims

1. A method of coating a magnet wire substrate comprising applying to an electrically conductive wire substrate at least one layer of an enamel composition comprising nylon reacted with 0.25% to 10% by weight based on the weight of the nylon present in the enamel composition of a titanate selected from the group consisting of $(RO)_4Ti$, dimers, trimers and mixtures thereof where R is an aromatic group.

4,614,671

ARTIFICIAL LEATHER WITH NON-WOVEN OR FLUFFY CLOTH BASE AND FOAMED PVC FILLER

Winston W. Wong, 201, Tung Hwa N. Rd, Taipei, Taiwan

Filed Nov. 28, 1983, Ser. No. 555,706
Int. Cl.[4] B05D 5/00
U.S. Cl. 427—245 1 Claim

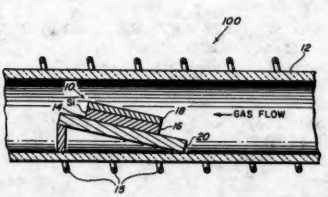
1. The method of manufacturing an artificial leather which consists of preparing a base mat, impregnating the base mat with a paste of a first polymeric resin material which is a foamable PVC resin, to form a filled base mat, coating the filler base mat with a second polymeric resin material, wherein the filler base mat is squeezed and pressed flat to retain 0.50–2.5 Kg/Yd-38" of said paste, then dried at 140°–180° C., foamed and sliced to the desired thickness.

4,614,672

LIQUID PHASE EPITAXY (LPE) OF SILICON CARBIDE

Arrigo Addamiano, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1985, Ser. No. 741,784
Int. Cl.[4] C23C 16/32
U.S. Cl. 427—249 15 Claims



1. A method for making highly pure cubic SiC devices that is highly controllable and reproducible comprising the steps of:
preparing a preform comprising a layer of high purity Si on which a layer of cubic SiC has been deposited;
transferring the preform to a furnace containing a molten bath of Si saturated with SiC at a temperature of between 1600°–1800° C., the saturation being insured by the use of a crucible made of carbons as a container for the Si;
dipping the Si-SiC preform into the molten bath and allowing deposition of more cubic SiC on the SiC layer by reducing the temperature in the region of the preform in relation to the rest of the molten bath by some 20°–50° C.;
removing the cubic SiC layer with additional cubic SiC deposited on it from the molten bath.

4,614,673

METHOD FOR FORMING A CERAMIC COATING

Anna L. Bendig, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 21, 1985, Ser. No. 747,525
Int. Cl.[4] B05D 3/02
U.S. Cl. 427—376.2 13 Claims

1. A method for forming a protective ceramic coating on the surface of a sensitive substrate, such as on a metal, a metal matrix composite, or a plastic which is not wet by a conventional sol, the method comprising the steps of:
(a) spraying a sol, containing a ceramic precursor in a carrier through a flowing stream of a suitable gas to alter the pH of the sol, and, thereby, to deposit a gelled film directly on the surface; and
(b) drying and curing the film under conditions suitable for the substrate to complete the protective ceramic coating.

4,614,674

POWDER COATING COMPOSITIONS FOR THE PREPARATION OF MATT COATINGS

Horst Lauterbach, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 3, 1985, Ser. No. 730,121
Claims priority, application Switzerland, May 11, 1984, 2338/84
Int. Cl.[4] B05D 3/02
U.S. Cl. 427—386 17 Claims

1. A powder coating composition comprising
(a) an epoxy resin,
(b) a saturated carboxyl-terminated polyester,
(c) a wax, and
(d) a metal salt or metal complex of an organic compound, wherein the metal is selected from the group consisting of Mg, Ca, Sr, Ba, Zn, Al, Sn and Sb;
wherein the sum of the epoxide equivalents is from 0.8 to 2.5 per kg of the binder (a) plus (b);
wherein the amounts of components (a) and (b) are chosen such that the ratio of carboxyl equivalents of the polyester (b) to the epoxide equivalents of the epoxy resin (a) is from 0.5 to 1.5; and
wherein the total amount of components (c) and (d) is not more than 20% by weight, based on the binder (a) plus (b).

4,614,675

ANTIMICROBIC, ANTISTATIC SILOXANE COMPOSITIONS AND METHOD FOR TREATING MATERIALS

Isao Ona, and Masaru Ozaki, both of Chiba, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1985, Ser. No. 811,576
Claims priority, application Japan, Dec. 21, 1984, 59-271346
Int. Cl.[4] B05D 3/02
U.S. Cl. 427—387 20 Claims

1. A composition comprising
(A) 100 parts by weight of a silane having the formula

$$Z^{\ominus}YR_2NR'SiX_gR_{(3-g)}$$

wherein $Z^{\ominus}$ denotes a halide ion, Y denotes a monovalent hydrocarbon radical containing from 10 to 20 carbon atoms, R denotes a monovalent hydrocarbon or halogenated hydrocarbon radical containing from 1 to 10 carbon atoms, R' denotes an alkylene radical having from 2 to 10 carbon atoms, X denotes an alkoxy radical or an alkoxyalkoxy radical containing from 1 to 4 carbon atoms and g has a value of 2 or 3, and
(B) from 1 to 100 parts by weight of an organopolysiloxane compound which contains, in each molecule, at least one siloxane unit having the formula

$X_aR_{(3-a)}SiR'''SiR_bO_{(3-b)/2}$

and at least one siloxane unit having the formula

$R''(OC_3H_6)_c(OC_2H_4)_dOR'SiR_eO_{(3-e)/2}$

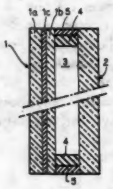
wherein R, R' and X are as noted above for component (A), R'' denotes a hydrogen atom or a monovalent organic radical having from 1 to 5 carbon atoms, R''' denotes an oxygen atom or an alkylene radical having from 2 to 4 carbon atoms, a=1, 2 or 3; b=0, 1 or 2; c=0 to 50; d=0 to 50; c+d=2 to 100; and e=1 or 2, any remaining siloxane units in the organopolysiloxane compound having the formula $R_fSiO_{(4-f)/2}$ wherein R has the meaning denoted above for components (A) and (B) and f=0, 1, 2 or 3.

4,614,676

MULTIPLE WINDOW GLASS HAVING THERMAL AND ACOUSTICAL INSULATING PROPERTIES

Marc Rehfeld, Montmagny, France, assignor to Saint-Gobain Vitrage, Courbevoie, France

Filed Jul. 1, 1983, Ser. No. 510,211
Claims priority, application France, Jul. 5, 1982, 82 11779
Int. Cl.[4] F06B *3/24*
U.S. Cl. 428—34 15 Claims



1. Multiple window glass comprising a first laminated glass plate and a second simple or laminated glass plate, parallel to the first plate and separated from it by a gas layer, the two plates being held together in a gastight manner wherein said first laminated glass plate comprises two simple glass sheets with a thickness between about 3 and 8 mm, joined by a layer of resin with a thickness at most equal to 10 mm and wherein the gas layer has a thickness between 6 and 30 mm and wherein the second plate has a thickness greater than 8 mm in the case of a simple glass, or is of a laminated glass meeting the same thickness criteria as the laminated glass of the first plate, and wherein the resin of the laminated glass of the first plate is chosen so that a bar 9 cm long and 3 cm wide, consisting of a laminated glass comprising two glass sheets 4 mm thick joined by a 2 mm layer of this resin, has a critical frequency that differs at most 35% from that of a bar of glass having the same length, the same width and 4 mm thickness.

7. Acoustical window glass comprising at least a laminated window glass, wherein the resin of the laminated window glass is such that a bar 9 cm long and 3 cm wide, consisting of a laminated glass comprising two glass sheets 4 mm thick joined by a 2 mm layer of this resin, has a critical frequency that differs at most about 35% from that of a bar of glass having the same length, the same width and 4 mm thickness.

4,614,677

SILICONE RELEASE LAYERS, LAMINATES AND METHODS

John R. Pennace, Paxton, and Sharon A. Quinn, Hudson, both of Mass., assignors to Flexcon Company, Inc., Spencer, Mass.

Continuation-in-part of Ser. No. 405,637, Aug. 5, 1982, abandoned, which is a continuation of Ser. No. 296,701, Aug. 27, 1981, abandoned, which is a continuation of Ser. No. 99,265, Feb. 20, 1980, abandoned, which is a continuation of Ser. No. 58,983, Jul. 10, 1979, abandoned, Ser. No. 969,254, Dec. 13, 1978, abandoned, and Ser. No. 759,154, Jan. 13, 1977, abandoned, and a continuation-in-part of Ser. No. 558,324, Mar. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 538,588, Jan. 6, 1975, abandoned. This application Apr. 4, 1984, Ser. No. 596,767
Int. Cl.[4] A61F *13/02*
U.S. Cl. 428—40 15 Claims

1. An article comprising a backing, and a releasable organopolysiloxane on said backing, said organopolysiloxane having a solventless viscosity before curing in the range from about 60 centipoises to about 600 centipoises at 25° C., wherein an adhesive comprising the intercondensation product of a mixture containing an organopolysiloxane resin and at least one alkylaryl polysiloxane gum, is positioned on said backing; and wherein said releasable organopolysiloxane has the following structure:

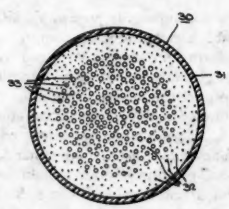
wherein
R' is an alkyl radical;
R is partially or entirely hydrogen, partially vinyl, and/or partially hydroxyl, with the remainder alkyl;
X is below 350.

4,614,678

FLEXIBLE COMPOSITE MATERIAL AND PROCESS FOR PRODUCING SAME

Roland A. Ganga, Joinville le Pont, France, assignor to Atochem, France

Filed Jun. 25, 1984, Ser. No. 624,044
Claims priority, application France, Jun. 28, 1983, 83 10632; Apr. 10, 1984, 84 05627
Int. Cl.[4] B32B *1/04*
U.S. Cl. 428—74 7 Claims



1. A composite article comprising a flexible sheath covering a roving of fibers impreganted with thermoplastic powder, the

melting point of the powder being the same or greater than that of the flexible sheathing material.

4,614,679

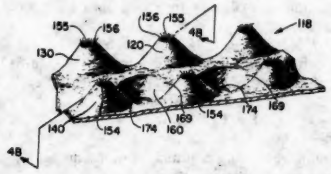
DISPOSABLE ABSORBENT MAT STRUCTURE FOR REMOVAL AND RETENTION OF WET AND DRY SOIL

Theodore E. Farrington, Jr., Milford, Me.; Milton D. Spahni, Okeana, and Thomas Rattray, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 444,935, Nov. 29, 1982, abandoned. This application Nov. 7, 1983, Ser. No. 549,066

Int. Cl.[4] B32B *3/10*

U.S. Cl. 428—138 54 Claims



1. A disposable absorbent structure for removal and retention of moisture and particulate from a soiled object coming in contact therewith, said structure comprising:

(a) a macroscopically patterned, three-dimensionally expanded, shear-resistant uppermost layer having an object contacting surface and a non-object contacting surface, said uppermost layer exhibiting a pattern of protuberances originating in and extending upwardly from a first plane and terminating in a second plane substantially parallel to and remote from said first plane, said uppermost layer being pervious to moisture in said first plane intermediate adjacent protuberances, said uppermost layer further exhibiting a multiplicity of discrete apertures in said second plane, said apertures in said second plane being located at the terminal end of said protuberances originating in said first plane; and

(b) a moisture absorbent substrate having its uppermost surface coextensive with and secured substantially continuously to substantially all of said non-object contacting surface of said uppermost layer, said discrete apertures in said second plane of said uppermost layer thereby directly exposing discrete portions of said moisture absorbent substrate to said soiled object when said absorbent structure and said object contact one another, said uppermost layer and the portions of said absorbent substrate secured thereto being resiliently deformable to permit the apertures in said uppermost layer which are located in said second plane to move closer to without becoming coplanar with those portions of said uppermost layer which are previous to moisture and which are located in said first plane when said absorbent structure and said soiled object contact one another at pressures of up to about 45 pounds per square inch (3.16 kilograms per square centimeter), yet move away from one another when said object and said absorbent structure separate from one another, whereby particulate is transferred into said absorbent substrate via said discrete apertures in said second plane and moisture is transferred into said absorbent substrate via said discrete apertures in said second plane and the fluid-pervious portions of said uppermost layer located in said first plane.

4,614,680

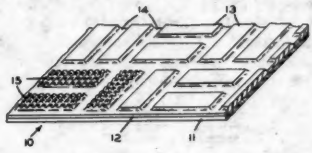
DECORATIVE PRODUCT

William F. Fry, Columbia, and Rickie L. Sitler, Wrightsville, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 16, 1984, Ser. No. 600,376

Int. Cl.[4] B32B *3/30*; B05D *3/02*

U.S. Cl. 428—158 19 Claims



1. A decorative laminate suitable as a floor covering comprising

a top layer of organic polymeric material having a relief pattern including a plurality of individual raised segments extending upwardly on the surface of said top layer, each surrounded by interconnected substantially uniplanar recessed segments, and

a base layer bonded to said top layer of a thermoplastic ethylene interpolymer selected from the group consisting of ethylene and vinyl-acetate; ethylene and acrylic acid; ethylene and methacrylic acid; ethylene and ethyl acrylate; ethylene and butyl or isobutyl acrylate; ethylene and methyl methacrylate; ethylene, vinyl acetate and methacrylic acid; and ethylene vinyl acetate and carbon monoxide, and mixtures of said copolymers.

4,614,681

PHOTOGRAPHIC SUPPORT

Hiroshi Hayashi; Kazunobu Katoh, and Takashi Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 145,502, Apr. 30, 1980, abandoned. This application Aug. 8, 1984, Ser. No. 638,549

Claims priority, application Japan, Oct. 22, 1979, 54-136077; Dec. 3, 1979, 54-156474

Int. Cl.[4] B32B *5/16, 27/08, 27/36*; G03C *1/76*

U.S. Cl. 428—201 13 Claims

1. A photographic element comprising a photosensitive sheet comprising a support having provided thereon a photosensitive layer and a cover sheet, wherein said support consists essentially of a polyester film having on the surface opposite to the photosensitive layer, an oxygen barrier layer or on both sides of said polyester film, an oxygen barrier layer, wherein said oxygen barrier layer has a thickness of about 0.5μ or more and comprises a copolymer including ethylene units of the formula

$$+CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}+$$

with an ethylene content of about 10 to 90 mol% and a vinyl alcohol content of about 90 to 10 mol%, wherein said element is a laminated integral type instant film in which the photographic layer is sandwiched between the support and a polyester film support.

2. A photographic element according to claim 1, wherein at least one of the polyester film and the oxygen barrier layer contains a dye or a pigment.

4,614,682

THERMOSENSITIVE IMAGE TRANSFER RECORDING MEDIUM

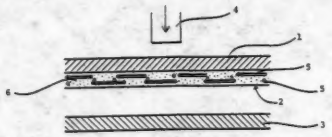
Akira Suzuki, Mishima; Hideo Watansbe, Kawasaki; Mitsuru Hashimoto, Numazu; Nobuo Mochizuki, Shizuoka; Keishi Kubo, Yokohama; Susumu Tatsumi, Hino, and Toshiyuki Kawanishi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 9, 1985, Ser. No. 785,715

Claims priority, application Japan, Oct. 11, 1984, 59-211496; Feb. 14, 1985, 60-025169

Int. Cl.[4] B41M 5/26

U.S. Cl. 428—213 19 Claims



1. A thermosensitive image transfer recording medium comprising a support material and an thermofusible ink layer formed thereon, said thermofusible ink layer comprising a dye component, a pigment having a needle-like crystal form and a binder agent, said pigment being dispersed in a network form throughout said thermofusible ink layer.

4,614,683

CHIP RESISTANT PRIMER COMPOSITION

Robert J. Barsotti, Franklinville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 30, 1985, Ser. No. 728,881

Int. Cl.[4] B32B 7/00; C08K 3/36, 3/04

U.S. Cl. 428—220 9 Claims

1. A coating composition comprising about 17–80% by weight of film forming binder, about 20–83% by weight of liquid carrier, and contains in addition pigments in a pigment to binder weight ratio of about 50:100 to 300:100; wherein the binder consists essentially of about

50–90% by weight of a polyester urethane resin in which the polyester urethane consists of the reaction product of an aliphatic diisocyanate and a hydroxyl terminated polyester chain extended with a polylactone, wherein the polyester consists of the esterification product of alkylene glycol, a polyhydric alcohol having at least three hydroxyl groups, and an aromatic dicarboxylic acid, said polyester urethane has a hydroxyl number of about 75–200 and a weight average molecular weight of about 3,000–25,000 determined by gel permeation chromatography using polymethyl methacrylate as the standard and

5–50% by weight of a crosslinking agent consisting essentially of a blend of a monomeric butylated and methylated melamine formaldehyde resin and a polymeric butylated melamine formaldehyde resin.

4,614,684

REINFORCED COMPOSITE COMPRISING RESIN IMPREGNATED METALLIZED POLYARAMIDE FABRIC AND METHOD OF MAKING SAME

Harold Ebneth, Leverkusen; Lothar Preis, Bergisch-Gladbach; Henning Giesecke, Cologne, and Gerhard D. Wolf, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 419,098

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139313

Int. Cl.[4] B29C 43/20; B29D 9/00; B32B 15/08

U.S. Cl. 428—252 7 Claims

1. A process of making a fiber reinforced molded resin product comprising

(a) impregnating strips of polyaramide fabric with a resin selected from the group consisting of an epoxy resin, an unsaturated polyester resin, a polyurethane resin and a polyimide resin,

(b) disposing plural layers of the resultant resin impregnated strips from step (a) in a mold and molding the resin impregnated strips thereon to cause hardening of the resin, fibers of said fabric having a metal layer deposited thereon without current.

6. A reinforced molded material comprising a cured resin selected from the group consisting of an unsaturated polyester resin, a polyurethane resin, an epoxy resin and a polyimide resin, the resin being reinforced with plural fabric layers, the fabric being composed of metallised polyaramide fibers.

4,614,685

MAGNETIC RECORDING MEDIUM HAVING IMPROVED RUNNING PROPERTIES

Katsumi Ryoke; Kenichi Masuyama, and Eiichi Tadokoro, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 9, 1984, Ser. No. 598,093

Claims priority, application Japan, Apr. 8, 1983, 58-61709

The portion of the term of this patent subsequent to Sep. 3, 2002, has been disclaimed.

Int. Cl.[4] B32B 5/16

U.S. Cl. 428—323 7 Claims

1. A magnetic recording medium, comprising:

a non-magnetic base having thereon;

a magnetic layer comprising carbon black having an average primary particle size of 32 to 45 mμ and Co-containing iron oxide having a specific surface area of 30 m^2/g or more, the dibutyl phthalate absorption of the carbon black particles being 100 ml or more based on 100 g of the carbon black, wherein said carbon black has a specific surface area in the range of $35m^2/g$ to 60 m^2g, and wherein the Co content in the Co-containing iron oxide is 2.25 to 8% by weight.

4,614,686

SYNTHETIC RUNNING SURFACE

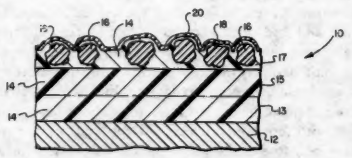
Harry E. Coke, and Gary W. Gill, both of Carrollton, Tex., assignors to Southwest Techni-Systems, Inc., Dallas, Tex.

Division of Ser. No. 295,023, Aug. 21, 1981, Pat. No. 4,420,513.

This application Jul. 22, 1983, Ser. No. 516,096

Int. Cl.[4] B32B 5/16

U.S. Cl. 428—327 20 Claims



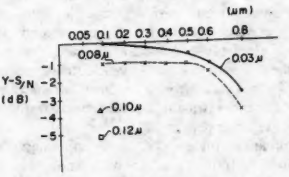
1. A runway comprising at least one layer formed by a mixture of a urethane elastomer base material having resilient granular particles dispersed substantially throughout said base material and totally encapsulated by said base material, said particles having a maximum thickness of from approximately 0.0625 inches to 0.125 inches and comprising approximately 26% to 30% of the total composition of said mixture by weight so as to provide a roughened traction surface of said runway comprising the top surface of said at least one layer.

4,614,687

MAGNETIC RECORDING MEDIUM

Masaharu Nishimatsu; Toshiaki Ide; Yoshiaki Saito, and Yuichi Kubota, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 3, 1984, Ser. No. 627,546
Claims priority, application Japan, Jul. 26, 1983, 58-135126
Int. Cl.[4] G11B 5/70
U.S. Cl. 428—329 2 Claims



1. A magnetic recording medium which comprises a plastic base film and a magnetic layer formed on one side of the base film and composed of ferromagnetic alloy powder dispersed in a resin binder, characterized in that said ferromagnetic alloy powder has a surface area of at least 48 m^2/g as measured by BDT method, said magnetic layer has a coercive force of at least 1,000 Oe and a surface roughness of at most 0.08 μm, and a thermoset backing layer having a surface roughness of from 0.05 to 0.6 μm is formed on the other side of the base film, the backing layer being made of a thermosetting resin composition comprising a vinyl chloride-vinyl acetate-vinyl alcohol copolymer, a polyurethane resin and a polyisocyanate.

4,614,688

SUPPORT FOR PHOTOGRAPHIC PAPER

Shigehisa Tamagawa, and Takashi Takayanagi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1984, Ser. No. 668,778
Claims priority, application Japan, Nov. 7, 1983, 58-208566
Int. Cl.[4] B32B 5/16, 27/10, 27/08
U.S. Cl. 428—331 6 Claims

1. A support for photographic paper, said support having formed on a back surface thereof a graphic property-imparting layer composed of (a) an inorganic pigment having a number average particle diameter of from 0.2 to 2.0 microns and an oil absorbing degree of not more than 100 cc/100 g and (b) a resin cured by irradiation with electron beams.

4,614,689

NON-OXIDE-SERIES-SINTERED CERAMIC BODY AND METHOD FOR FORMING CONDUCTING FILM ON THE SURFACE OF NON-OXIDE-SERIES-SINTERED CERAMIC BODY

Kazuo Ikeda; Akio Sayano, and Shun-ichiro Tanaka, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 24, 1984, Ser. No. 603,452
Claims priority, application Japan, Apr. 28, 1983, 58-76000
Int. Cl.[4] B05D 5/12
U.S. Cl. 428—409 13 Claims

1. A non-oxide-series-sintered ceramic body containing silicon and nitrogen, which has a conductive film on its surface, the conductive film comprising (a) a metal silicide selected from the group consisting of molybdenum silicide and tungsten silicide and (b) a nitride of a Group IVA transition metal, said metal silicide being a reaction product of silicon contained in the ceramic body with a metal compound selected from the group consisting of metal molybdate and tungsten silicide, and said nitride being a reaction product of nitrogen contained in the ceramic body with a group IVA transition metal or a compound thereof.

5. A method of forming a conductive film on the surface of a non-oxide-series-sintered ceramic body comprising the steps of (a) coating the surface of a non-oxide-series-sintered ceramic body with a metal compound selected from the group consisting of metal molybdate and metal tungstate, (b) melting the metal compound, and (c) sintering the resultant structure in a reducing atmosphere to form said conductive film on the surface of the ceramic body, said ceramic body containing nitrogen and said metal compound containing a group IVB transition metal or compound thereof.

4,614,690

INORGANIC FIBER-REINFORCED METALLIC COMPOSITE MATERIAL

Takemi Yamamura; Masahiro Tokuse, and Yoshiharu Waku, all of Ube, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Apr. 16, 1985, Ser. No. 723,891
Claims priority, application Japan, Apr. 20, 1984, 59-78389
Int. Cl.[4] B32B 15/14
U.S. Cl. 428—614 13 Claims

1. An inorganic fiber-reinforced metallic composite material comprising a matrix of a metal or its alloy and inorganic fibers as a reinforcing material, comprising

(a) inorganic fibers of silicon, an element selected from the group consisting of titanium or zirconium, carbon and oxygen, said inorganic fibers being free of any surface coating, in the form of:

(i) an amorphous material of Si, M, C and O, wherein M represents titanium or zirconium, or

(ii) an aggregate of ultrafine crystalline particles with a particle diameter of not more than 500 Å of β-SiC, MC, a solid solution of β-SiC and MC and MC_{1-x}, and amorphous SiO_2 and Mo_2, wherein in the above formulae, M represents titanium or zirconium, and x is a number represented by $0<x<1$, or

(iii) a mixture of the amorphous material (i) and the aggregate (ii), and

(b) the metal selected from the group consisting of aluminum, magnesium or titanium, and the alloy is selected from the group consisting of an aluminum alloy, a magnesium alloy or a titanium alloy;

said inorganic fibers having an initial degradation speed of not more than about 0.3 $kg/mm^2.sec^{-1}$ and a tenacity reduction ratio of not more than about 30% during the production of the composite material;

said composite material having a short beam shear strength, measured in the monoaxially reinforced state, of at least about 8 kg/mm^2;

said composite material having a transverse tensile strength, measured in the monoaxially reinforced state, of at least about 6 kg/mm^2 and

said composite material having a fatigue limit/tensile strength ration of at least about 0.4.

4,614,691

METHOD FOR PRODUCTION OF METAL SHEET COVERED WITH POLYESTER RESIN FILM

Tsuneo Inui; Atsuo Tanaka; Tetsuhiro Hanabusa, and Harunori Kubota, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,732
Int. Cl.[4] B21D 39/00
U.S. Cl. 428—623 18 Claims

1. A method for laminating a biaxially oriented polyester resin film, which has been precoated with an epoxy resin containing a curing agent for the epoxy resin, to a metal sheet covered with double layer consisting of an upper layer of hydrated chromium oxide containing sulfur and fluorine, wherein the atomic ratio of sulfur and fluorine to the total of chromium, oxygen, sulfur and fluorine in the hydrated chro-

mium oxide is 0.1 to 2.5 atomic percent and 0.5 to 10 atomic percent, respectively and a lower layer of metallic chromium, which comprises heating the metal sheet to a temperature of 220° C. to below the melting point of said polyester resin film, and then contacting the surface of said polyester resin film precoated with epoxy resin containing the curing agent for the epoxy resin with the metal sheet.

4,614,692

FUEL CELL ELECTRODE, PROCESS FOR PRODUCING THE SAME AND FUEL CELL USING THE SAME

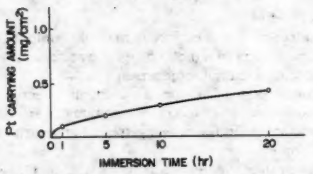
Hiroshi Kajiyama; Tetsuro Minemura; Hisashi Ando, and Kiyoshi Konno, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1985, Ser. No. 719,080

Claims priority, application Japan, Apr. 2, 1984, 59-63376; Apr. 3, 1984, 59-66558

Int. Cl.⁴ H01M *4/86*

U.S. Cl. 429—44 **22 Claims**



1. A fuel cell electrode comprising at least one catalytic active component selected from noble metals belonging to the group I and group VIII in the periodic table carried on surfaces and among lamellar crystalline layers of a porous electroconductive substrate made from a donor-type graphite intercalation compound.

4,614,693

METAL-HALOGEN SECONDARY BATTERY

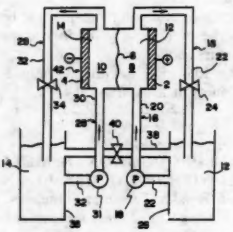
Takafumi Hashimoto; Yasuo Ando, and Kenichiro Jinnai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed May 30, 1985, Ser. No. 739,224

Claims priority, application Japan, Jun. 6, 1984, 59-114396; Jun. 12, 1984, 59-119036

Int. Cl.⁴ H01M *12/00*

U.S. Cl. 429—72 **11 Claims**



1. A metal-halogen secondary battery comprising:

a positive electrode and a negative electrode which are arranged opposite to each other at a predetermined distance apart;

a separator arranged between said positive electrode and said negative electrode so as to define a positive electrode chamber between said separator and said positive electrode and a negative electrode chamber between said separator and said negative electrode, said separator comprising a porous memberane which prevents the permeation of halogen molecules therethrough;

negative electrolytes and positive electrolytes which are contained in each of said positive electrode chamber and said negative electrode chamber, said negative electrolytes and positive electrolytes being comprosed of a solution of a metal-halogen compound;

circulating means including a pump and at least one electrolyte storage tank for circulating said positive electrolytes and said negative electrolytes from said electrolyte storage tank through said pump to each of said positive electrode chamber and said negative electrode chamber;

pressure control means for obtaining and maintaining a higher electrolyte pressure in said positive electrode chamber than in said negative electrode chamber to cause said positive electrolytes to flow from said positive electrode chamber through said separator to said negative electrode chamber; and

communication means to allow said negative electrode chamber to communicate with said positive electrode chamber to cause part of said negative electrolytes to flow from said negative electrode chamber through said communication means and said circulating means to said positive electrode chamber.

4,614,694

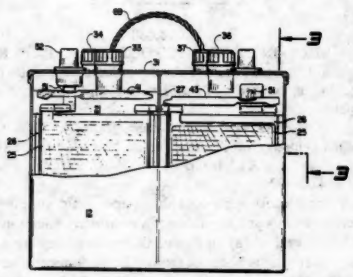
ELECTROLYTE BATTERY ANTI-SPLASH SYSTEM

Danny O. Manthis, Highland, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Aug. 9, 1985, Ser. No. 764,105

Int. Cl.⁴ H01M *2/12*

U.S. Cl. 429—84 **20 Claims**



1. In a method of providing a battery having a casing including a cell chamber for receiving electrolyte battery elements including positive and negative battery plates disposed for immersion in the electrolyte in the cell chamber, a cover for said casing spaced from the battery elements in the cell chamber, and a gas venting device for that cell chamber extending through said cover, the improvement of preventing electrolyte from splashing through the gas venting device during vibration of the battery, comprising in combination the steps of:

providing separately from said gas venting device a baffle plate capable of floating on the electrolyte in the cell chamber;

disposing said baffle plate between said battery plates and said gas venting device for flotation on the electrolyte below said gas venting device, and

disverting with the floating baffle plate any splashing electrolyte away from the gas venting device.

9. In a battery having a casing including a cell chamber for receiving electrolyte, battery elements including positive and negative battery plates disposed for immersion in the electrolyte in the cell chamber, a cover for said casing spaced from the battery elements in the cell chamber, and a gas venting device for that cell chamber extending through said cover, the

improvement of preventing electrolyte from splashing through the gas venting device during vibration of the battery, comprising:

a baffle plate capable of floating on the electrolyte in the cell chamber separately from said gas venting device for diverting splashing electrolyte away from the gas venting device, said baffle plate being between said battery plates and said gas venting device for flotation on the electrolyte below said gas venting device.

4,614,695

BATTERY AND METHOD OF PRODUCING SAME

Jack K. Ibbott, Tokyo, Japan, assignor to Fanuc Ltd., Tokyo, Japan

PCT No. PCT/JP84/00100, § 371 Date Nov. 7, 1984, § 102(e) Date Nov. 7, 1984, PCT Pub. No. WO84/03801, PCT Pub. Date Sep. 27, 1984

PCT Filed Mar. 14, 1984, Ser. No. 675,060

Claims priority, application Japan, Mar. 14, 1983, 58-40624

Int. Cl.[4] H01M *6/06, 2/00*

U.S. Cl. 429—127 23 Claims

1. A composite sheet form battery consisting of only a positive pole, a negative pole, and an electrolyte as the active electric energy producing elements thereof, and wherein:

said positive pole comprises an ion-permeable sheet member having carbon as a positive element;

said negative pole comprises a thin metal member;

said electrolyte comprises a semisolid adhesive bonding said positive pole ion-permeable sheet member and said negative pole thin metal member in composite form;

said positive pole ion-permeable sheet member and said negative pole thin metal member are spaced apart and out of contact with each other; and

said battery has a thickness, flexibility, and cutting characteristics similar to paper.

4,614,696

NEGATIVE ELECTRODE PLATE FOR ALKALINE STORAGE CELLS OF SEALED TYPE

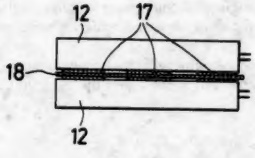
Tukasa Ito, and Noriyuki Miyazaki, both of Sumoto, Japan, assignors to Sanyo Electric Co., Ltd. Japan

Filed Dec. 12, 1984, Ser. No. 680,817

Claims priority, application Japan, Dec. 20, 1983, 58-241210; Mar. 26, 1984, 59-57772; Mar. 27, 1984, 59-60178; Apr. 11, 1984, 59-72418

Int. Cl.[4] H01M *4/36*

U.S. Cl. 429—222 15 Claims



1. A negative electrode plate for alkaline storage cells of the sealed type comprising an active material layer formed on each of opposite surfaces of an electrically conductive carrier sheet from a paste comprising cadmium oxide powder, and an electrically conductive layer comprising carbon powder and a water-soluble binder formed on a surface of the active material layer.

4,614,697

DEVELOPING METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Tateki Oka, Toyohashi, and Yoshihiro Uchimoto, Habikino, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1985, Ser. No. 694,635

Claims priority, application Japan, Jan. 30, 1984, 59-16461

Int. Cl.[4] G03G *13/22*

U.S. Cl. 430—103 19 Claims

1. A developing method for developing an electrostatic latent image carried on a surface of an electrostatic latent image support member, said developing method comprising the steps of:

(a) preparing a developing material by stirring a mixture of high resistance carrier, electrically insulative toner to be triboelectrically charged to a predetermined polarity through contact with said high resistance carrier, and electrically insulative particles with an average particle diameter of 8 to 20 μm which are smaller than an average particle diameter of said carrier,

(b) triboelectrically charging said electrically insulative particles to a polarity opposite that of said predetermined polarity through contact with said toner, but said electrically insulative particles not being substantially triboelectrically charged through contact with said carrier, and

(c) developing the electrostatic latent image by said developing material thus prepared so as to cause said toner to adhere to the surface corresponding to image portions of the elctrostatic latent image on the electrostatic latent image support member, and to cause said electrically insulative particles to adhere to the surface corresponding to non-image portion thereof, the adherence of said electrically insulative particles to said non-image portion being caused by the application of a bias voltage in proximity thereto.

4,614,698

TWO-COMPONENT ELECTROPHOTOGRAPHIC DEVELOPER WITH MAGNETIC CARRIER

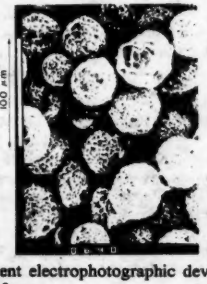
Nobuhiro Miyakawa, Ashiya; Koji Yano, Tokyo; Kazuo Yamamoto, Tokyo; Teruaki Higashiguchi, Tokyo, and Yoshinobu Kawakami, Tokyo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 27, 1985, Ser. No. 802,315

Claims priority, application Japan, Nov. 30, 1984, 59-251653

Int. Cl.[4] G03G *9/14*

U.S. Cl. 430—106.6 14 Claims



1. A two-component electrophotographic developer composed of a mixture of

(a) a magnetic carrier of spherical sintered ferrite particles having raised and depressed portions attributed to the primary particles on their surface, a median size of from 30 to 50 micrometers, an apparent density of less than 2.6 g/cc and an electric resistance, measured in the form of a magnetic brush, of from 6×10^4 to 2.5×10^6 ohms, and

(b) chargeable toner particles having a volume inherent resistivity of at least 1×10^{13} ohms-cm and a specific inductive capacity of from 4 to 6 said toner particles being substantially free from particles having a particle diameter of not more than 5 micrometers.

4,614,699

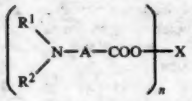
LIQUID DEVELOPERS FOR ELECTROSTATIC IMAGES

Katsugi Kitatani; Masataka Murata; Hiroaki Yokoya, and Nobuo Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

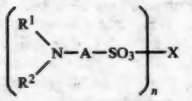
Filed Jul. 16, 1984, Ser. No. 631,114
Claims priority, application Japan, Jul. 14, 1983, 58-128227
Int. Cl.[4] G03G 9/02
U.S. Cl. 430—115 21 Claims

1. A liquid developer for electrostatic images which comprises a liquid carrier having an electric resistance of at least 10^9 Ω·cm and a dielectric constant of not more than 3 and at least one negative charge controlling agent selected from the group consisting of compounds represented by formula (I) or (II) and complex salts containing a molecular structure shown by the formula (I) or (II):

(I)



(II)



wherein R^1 and R^2 each represents a hyrogen atom, an alkyl and substituted alkyl group, and aryl and a substituted aryl group, an aralkyl group, an aliphatic acyl group, and aromatic acyl group, an alkylsulfonyl group, an arylsulfonyl group, R^1 and R^2 represent identical group or different groups, or R^1 and R^2 together form a heterocyclic ring with the nitrogen atom in the formulae, and when one of R^1 and R^2 represents an hydrogen atom, the other represents a group other than a hydrogen atom;

A represents an alkylene group or a substituted alkylene group;

X represents a hydrogen atom, a monovalent to tetravalent metal atom, a quarternary ammonium cation, and

n represents a positive integer of 1 to 4, and when X represents the metal atom defined above and the number represented by n is not sufficient to satisfy the valence of the metal atom represented by X, the residual metal valence bond or bonds are occupied with one or more ligands to form the complex salt containing a molecular structure shown by the formula (I) or (II), said charge controlling agent being dissolved in said liquid carrier.

4,614,700

IMAGE FORMING PROCESS WITH MAGNETIC BRUSH DEVELOPMENT

Yoko Yamamoto; Kunio Shigeta, and Jiro Takahashi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1985, Ser. No. 794,618
Claims priority, application Japan, Nov. 15, 1984, 59-239539; Nov. 16, 1984, 59-240541; Nov. 26, 1984, 59-247969
Int. Cl.[4] G03G 13/09
U.S. Cl. 430—122 11 Claims

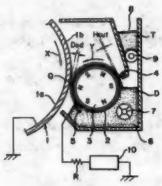
1. In a process for forming an image comprising;

(i) forming a latent image on a latent image bearing member comprising an organic photoconductive photosensitive member;

(ii) forming a magnetic brush with a two-component developer comprising a toner and a magnetic carrier on a developer conveying support arranged as opposed to said latent image bearing member; and

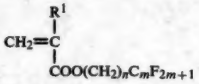
(iii) developing said latent image by brushing it with said magnetic brush in a developing region;

the improvement wherein an absolute value of a maximum potential (V) of a charge for forming said latent image is from 400 to 700, a minimum value of a gap between said photosensitive member and said developer conveying support is from

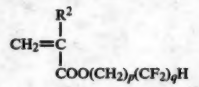


0.30 to 0.65 mm, said carrier comprises a core material and a polymer comprising a monomer component represented by the following formula (I), (II) or (III):

Formula (I)



Formula (II)



Formula (III)

wherein R^1 and R^2 each represent a hydrogen atom or a methyl group; each of n and p represents an integer of 1 to 8; each of m and q represents an integer of 1 to 19; X^1, X^2, X^3 and X^4 each represent a hydrogen atom, a chlorine atom, a fluorine atom, a lower perfluoroalkyl group or a lower perfluoroalkoxy group, which may be either identical or different, and at least 2 of X^1, X^2, X^3 and X^4 are fluorine atoms.

4,614,701

PHOTOCURABLE DIAZO OR AZIDE COMPOSITION WITH ACRYLIC COPOLYMER HAVING HYDROXY AND AMINO GROUPS ON SEPARATE ACRYLIC MONOMER UNITS

Hirofumi Mori, Suita, and Hitoshi Hori, Jyoyo, both of Japan, assignors to Sekisui Fine Chemical Co., Ltd., Osaka, Japan

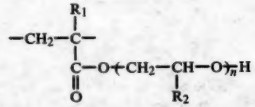
Filed Sep. 28, 1984, Ser. No. 655,453
Int. Cl.[4] G03C 1/54, 1/71
U.S. Cl. 430—175 7 Claims

1. A photocurable resin composition comprising a uniform mixture of:

(A) 100 parts by weight of a copolymer which is water-soluble and dyeable with an acid dye and which is composed of, as structural units,

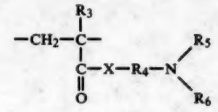
(a) 20 to 70% by weight of a hydroxyl group-containing acrylic monomer unit represented by the formula

(I)



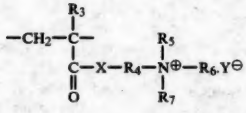
wherein R_1 and R_2, independently from each other, represent hydrogen, methyl or ethyl, and n is 1, 2 or 3, and

(b) 25 to 60% by weight of a nitrogen-containing acrylic monomer unit represented by at least one of the formulae



and

(II)



(III)

wherein R_3 represents hydrogen or methyl, X represents O or NH, R_4 represents a linear or branched alkylene group having 2 or 3 carbon atoms, R_5, R_6 and R_7, independently from each other, represent hydrogen or a linear or branched alkyl group having 1 to 4 carbon atoms, and $Y^{\ominus}$ represents an anion of an acid, and

(B) 2–30 parts by weight of a diazo compound containing at least two diazo groups per molecule, or 10–30 parts by weight of an azide compound containing at least two azide groups per molecule, as a light sensitizer for the copolymer.

4,614,702

HEAT-DEVELOPABLE COLOR PHOTOGRAPHIC MATERIAL WITH MERCAPTO ANTIFOGGANT

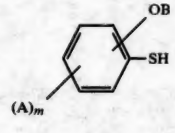
Satoru Sawada, and Yoshiharu Yabuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 561,710, Dec. 15, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,483
Claims priority, application Japan, Dec. 17, 1982, 57-222247
Int. Cl.[4] G03C *5/54, 1/40, 1/34*
U.S. Cl. 430—203 **22 Claims**

10. A method of forming a color image, comprising the steps of:

imagewise exposing and heating a heat-developable color photographic material comprising a support having thereon a light-sensitive silver halide, a hydrophilic binder, a dye releasing redox compound capable of releasing a hydrophilic dye and a compound represented by the general formula (IIA):

(IIA)



wherein B represents an alkyl group or a substituted alkyl group; m represents 0 or an integer of 1 to 4; and A represents an alkyl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an acylamino group, a sulfonylamino group or a halogen atom and when m represents 2 or more A may be the same or different, thereafter the hydrophilic dye being imagewise transferred to an image receiving layer.

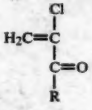
4,614,703

NEGATIVE PHOTORESISTS OF α-CHLOROVINYL METHYL KETONE COPOLYMERS

James E. Guillet, Don Mills, Canada, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 31, 1984, Ser. No. 666,863
Int. Cl.[4] G03C *1/71;* C08F *8/00*
U.S. Cl. 430—271 **10 Claims**

1. An article of manufacture comprising a microcircuit element substrate having applied thereon a thin homogeneous film sensitive in the deep UV light range of a negative photoresist composition comprising a copolymer in which at least one of the comonomers is selected from the group consisting of (a) a monomer of the formula:



where R is a substituent selected from 1 to 6 carbon alkyl and halogen substituted alkyl, phenyl and halogen substituted phenyl, and naphthyl, and (b) at least one of the comonomers is selected from the group consisting of 1–4 carbon alkyl acrylates and methacrylates, styrene vinyl toluene and vinyl acetate.

4,614,704

STABLE UV CURABLE COMPOSITIONS COMPRISING TRIPHENYL PHOSPHITE FOR FORMING SOLDER MASK COATINGS OF HIGH CURE DEPTH

Paul L. K. Hung, Edison, and Mark L. Lavach, Stanhope, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Jun. 21, 1985, Ser. No. 747,478
Int. Cl.[4] G03C *1/70, 1/71*
U.S. Cl. 430—284 **3 Claims**

1. A stable UV curable composition capable of forming coatings having a high cure depth comprising:

(a) a UV curable compound which is a urethane diacrylate,

(b) a photoinitiator, and

(c) triphenylphosphite, in an effective amount of 0.1 to about 8% by weight of said composition, to provide said improved cure depth.

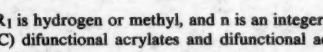
4,614,705

OPTICAL INFORMATION RECORDING MEDIUM

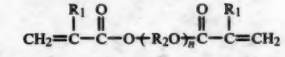
Masaakira Umehara, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,110
Claims priority, application Japan, Feb. 17, 1984, 59-26991; May 21, 1984, 59-100406; Jul. 17, 1984, 59-146912; Dec. 12, 1984, 59-260798
Int. Cl.[4] G11B *7/24;* B32B *27/30*
U.S. Cl. 430—286 **19 Claims**

1. An optical information recording medium comprising a substrate, a recording layer and an under layer between said substrate and said recording layer, said under layer having been formed by curing, with radiation, a light-curable composition consisting essentially of a photo-polymerizable component and a photo-polymerization initiator, wherein said photo-polymerizable component of said light-curable composition consists of one or more members selected from the group consisting of (A) difunctional acrylates and difunctional methacrylates having a cycloaliphatic or polycycloaliphatic hydrocarbon group combined with an alkyleneglycol, (B) difunctional acrylates and difunctional methacrylates having the formula



wherein R_1 is hydrogen or methyl, and n is an integer of 1 to 10, and (C) difunctional acrylates and difunctional acrylates having the formula



wherein R_1 has the same meaning as defined above, R_2 is alkylene of C_2 to C_4 and n is an integer of 1 to 20.

4,614,706

METHOD OF FORMING A MICROSCOPIC PATTERN WITH FAR UV PATTERN EXPOSURE, ALKALINE SOLUTION DEVELOPMENT, AND DRY ETCHING

Toshiharu Matsuzawa, Higashimurayama; Takao Iwayanagi, Tokyo; Kikuo Douta, Hachioji; Hiroshi Yanazawa, Tokyo; Takahiro Kohashi, Hachioji, and Saburo Nonogaki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 265,170, May 19, 1981, abandoned. This application May 2, 1984, Ser. No. 606,216

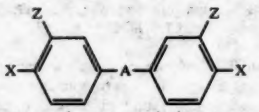
Claims priority, application Japan, May 19, 1980, 55-65404

Int. Cl.[4] G03F 7/26; H01L 21/30; C23F 1/08

U.S. Cl. 430—313 31 Claims

1. A method of forming a microscopic pattern, including:

(1) the step of forming a photoresist film on a substance to form the microscopic pattern, the photoresist film containing a polymer, having phenolic hydroxyl groups, that is soluble in alkaline aqueous solution, and further containing an aromatic azide which is represented by a general formula:



(where A denotes an element or substituent unconjugate with two benzene rings, X denotes H or N_3, and Z denotes N_3 and X is H and it denotes H or Cl when X is N_3), said photoresist film absorbing far-ultraviolet radiation while substantially not exhibiting absorption of radiation in the region above 320 nm, whereby resolution is improved due to the absorption of far-ultraviolet radiation without absorption of radiation above 320 nm,

(2) the step of irradiating a desired part of said photoresist film with far-ultraviolet radiation, to lower a solubility in alkaline aqueous solution of the irradiated part,

(3) the step of developing the irradiated photoresist film with an alkaline aqueous solution, to remove the unirradiated part of said photoresist film and to form a photoresist pattern without swelling or meandering of the irradiated part, whereby the unirradiated part is removed without swelling or meandering of the irradiated part, and

(4) the step of performing dry etching by employing said photoresist pattern as a mask, to form said microscopic pattern of said substance, whereby a microscopic pattern having line widths and spacings of 0.5–2 μm can be formed with high precision.

4,614,707

COLOR REVERSAL PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Munehisa Fujita; Yasuhiro Hayashi; Takashi Ozawa, and Nobutaka Ohki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

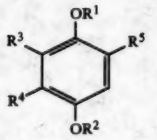
Filed Feb. 19, 1985, Ser. No. 702,564

Claims priority, application Japan, Feb. 17, 1984, 59-028136

Int. Cl.[4] G03C 5/50, 1/46, 1/02

U.S. Cl. 430—379 24 Claims

1. A color reversal photographic light-sensitive materials comprising a base having thereon (a) at least one light-sensitive silver halide emulsion layer containing a dye forming coupler and (b) a silver halide emulsion layer substantially without light-sensitivity provided adjacent to said light-sensitive layer, or (a) at least one light-sensitive silver halide emulsion layer containing a dye forming coupler, (b) a silver halide emulsion layer substantially without light-sensitivity to light, and (c) an intermediate layer therebetween, wherein said silver halide emulsion layer substantially without light-sensitivity, or both said intermediate layer and said silver halide emulsion layer substantially without light-sensitivity contain at least one compound represented by the following formula (I):



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or a group having 1 to 10 carbon atoms capable of being hydrolyzed with alkali, R^3, R^4 and R^5 each represents a hydrogen atom, a sulfo group, a carboxyl group, a sulfoalkyl group having 1 to 6 carbon atoms, a carboxyalkyl group having 1 to 6 carbon atoms or an alkyl group having 1 to 22 carbon atoms, provided that at least one of R^3, R^4 and R^5 is a group selected from a sulfo group, a carboxyl group, a sulfoalkyl group and a carboxyalkyl group, and at least one of R^3, R^4 and R^5 is an alkyl group.

4,614,708

METHOD FOR THE PREPARATION OF STABLE AQUEOUS DISPERSIONS OF POLYMER BEADS AND THE USE OF THESE DISPERSIONS IN PHOTOGRAPHIC ELEMENTS

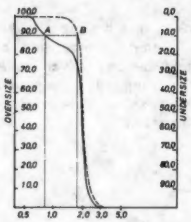
Daniel M. Timmerman; Jan J. Priem, both of Mortsel, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 442,021, Nov. 16, 1982, abandoned. This application Feb. 16, 1984, Ser. No. 580,272

Claims priority, application United Kingdom, Nov. 23, 1981, 8135262

Int. Cl.[4] G03C 1/84, 1/02

U.S. Cl. 430—517 7 Claims



1. Photographic element comprising a support and at least one silver halide emulsion layer wherein said element comprises in a layer of said photographic element and/or in the support thereof finely divided solid spherical polymer beads obtained by the steps of:

(A) dissolving in an aqueous solvent mixture of water and at least one water-miscible polar organic solvent:

(1) at least one α,β-ethylenically unsaturated monomer capable of forming a polymer that is soluble in the monomer(s) present in said aqueous solvent mixture but which is insoluble in said aqueous solvent mixture,

(2) a free radical-forming polymerization initiator that is soluble in the aqueous solvent mixture, and

(3) a graft-polymerizable polymer containing hydrophilic groups, and capable of forming a graft polymer that remains soluble in said aqueous solvent mixture,

the weight ratio of said graft-polymerizable polymer to said monomer(s) being in the range from 1.5:100 to 8:100 and a weight ratio of polymerization initiator to monomer(s) from 0.1:100 to 5:100, and

(B) heating the solution obtained to a temperature from 50° C. to the reflux temperature thereof with continuous stirring to initiate by polymerization the simultaneous massive formation of homopolymer or copolymer from

said monomer and precipitation thereof, and the formation of a small porportion of graft polymer,

said beads characterized in that they comprise a nucleus and an envelope which have different compositions, said nucleus being made up primarily of polymerized α,β-ethylenically unsaturated monomer(s) and said envelop being made up primarily of grafted polymer chains formed from said polymer containing hydrophilic groups and said α,β-ethylenically unsaturated monomer(s).

4,614,709

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masao Sasaki, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Dec. 20, 1983, Ser. No. 563,586

Claims priority, application Japan, Dec. 21, 1982, 57-225301

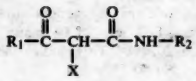
Int. Cl.⁴ G03C *7/26, 7/36, 7/32*

U.S. Cl. 430—546 **24 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer,

said silver halide emulsion layer containing in combination at least one yellow dye image-forming coupler having the following Formula (I) and at least one high-boiling organic solvent having the following Formula (II):

Formula (I)



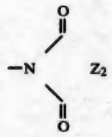
wherein R_1 is an alkyl radical or an aryl radical; R_2 is an aryl radical; and X is a radical that can be split off by the reaction with the oxidized product of an aromatic primary amine-type color developing agent,

wherein said radical represented by X is a radical selected from the group consisting of Formula (IV), (V), and or (VI):

$$-O-R_5$$ Formula (IV)

wherein R_5 is an aryl radical, a heterocyclic radical or an acyl radical, or

Formula (V)

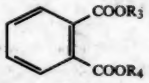


wherein Z_2 is a group of nonmetallic atoms capable of forming a 4- to 6-member ring together with

Formula (VI)

wherein R_7 and R_8 each is a hydrogen atom, a halogen atom, an alkyl radical, an alkenyl radical, an alkoxy radical, an aryl radical, a carboxy radical, an alkoxycarbonyl radical, a carbamyl radical, a sulfone radical, a sulfamyl radical, a sulfonamido radical, an acylamido radical, an ureido radical or an amino radical;

Formula (II)



wherein R_3 and R_4 each is an alkyl radical selected from the group consisting of nonyl radical, decyl radical and undecyl radical, said R_3 and R_4 being either the same or different.

4,614,710

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Shun Takada; Takashi Kadowaki, and Kaoru Onodera, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Apr. 18, 1985, Ser. No. 724,628

Claims priority, application Japan, Apr. 19, 1984, 59-78886

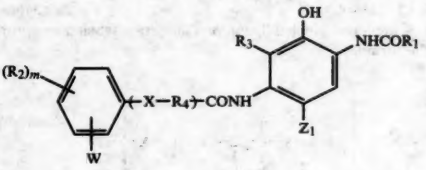
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.

Int. Cl.⁴ G03C *7/32, 7/34*

U.S. Cl. 430—549 **8 Claims**

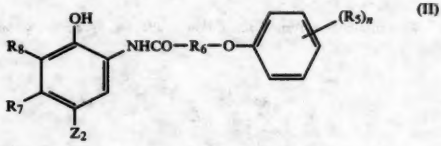
1. A silver halide photographic material having one or more silver halide emulsion layers formed on a support, at least one of said silver halide emulsion layers containing a cyan coupler of formula (I) in combination with a cyan coupler of formula (II):

(I)



(wherein R_1 is an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic group; R_2 is a halogen atom or a monovalent organic group; m is an integer of 0 to 4, provided that when m is 2 or more, R_2 may be the same or different; R_3 is a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; W is an alkylsulfonamido group, an aryl-sulfonamido group, an alkylsulfamoyl group or an arylsulfamoyl group; R_4 is an alkylene group; X is a divalent group; l is 0 or a positive integer; Z_1 is a hydrogen atom or a group capable of leaving upon reaction with the oxidized product of an aromatic primary amine color developing agent);

(II)



(wherein R_5 is an alkyl or alkoxy group; n is an integer of 0 to 5, provided that when n is 2 or more, R_5 may be the same or different; R_6 is an alkylene group; R_7 is an alkyl group; R_8 is a hydrogen atom, a halogen atom or an alkyl group; and Z_2 is a hydrogen atom or a group capable of leaving upon reaction with the oxidized product of an aromatic primary amine color developing agent).

4,614,711
SILVER HALIDE EMULSION

Tadao Sugimoto, and Toshiaki Hayakawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 8, 1984, Ser. No. 638,821
Claims priority, application Japan, Aug. 8, 1983, 58-145334
Int. Cl.[4] E03C 1/02
U.S. Cl. 430—567 20 Claims

1. A silver halide emulsion containing negative working silver halide grains, having surface sensitivity the same as or more than grain internal sensitivity, each comprising a core of silver bromide or silver bromoiodide, a first layer exterior said core composed of silver iodide or silver bromoiodide, and a second layer exterior said first layer composed of silver bromide or silver bromoiodide different from that of the first layer in halide composition, and having a projected area diameter-to-thickness ratio of less than 5, in which:

(1) said first layer contains more iodide than said core by 10 mol% or more; and

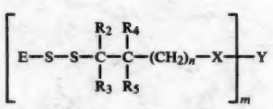
(2) silver in the first layer accounts for 0.01 to 30 mol% of the total silver in the grain.

4,614,712
IMMUNOASSAYS WITH LUCIFERASE LABELED LIGANDS OR RECEPTORS

Thomas O. Baldwin; Thomas F. Holzman, both of Bryan, Tex.; Paul S. Satoh, Portage, and Frederick S. Yein, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich. and Texas A&M University System, College Station, Tex.

Filed Feb. 25, 1983, Ser. No. 469,852
Int. Cl.[4] G01N 33/532, 33/543, 33/53
U.S. Cl. 435—4 26 Claims

1. A luciferase labeled ligand or a luciferase labeled receptor of the formula



wherein E represents luciferase absent the reactive sulfhydryl group;

n is zero to 15;

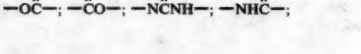
R_2 and R_3 are the same and are hydrogen, methyl or ethyl;

R_4 and R_5 are the same and are hydrogen, methyl or ethyl; or R_2, R_3, R_4 and R_5 taken together with the carbon atoms to which they are attached represent a cycloalkyl group having from 4 to 6 carbon atoms, or represent 1,4-phenylene;

m is an integer equivalent to the number of reactive functions present on the ligand or receptor capable of being labeled;

X represents a functional linkage selected from the group consisting of

—NR— wherein R is hydrogen or any group which may be present on the ligand or receptor functional secondary amine;



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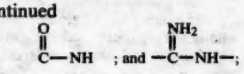


and

Y represents the ligand or receptor to be labeled or assayed.

3. An immunoassay for quantitating the presence of a ligand in a medium comprising:

(a) providing a luciferase labeled ligand or a luciferase labeled receptor of claim 1;

(b) incubating the medium and the labeled ligand or the labeled receptor provided in (a);

(c) activating said luciferase; and

(d) measuring the luciferase activity.

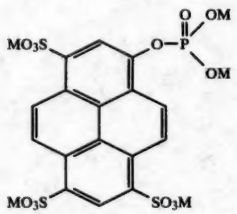
22. A mercantile kit for performing immunoassays for detecting the presence of a ligand in a medium which comprises multiple containers wherein one of said containers has therein a luciferase labeled ligand or a luciferase labled receptor of claim 1.

4,614,713
FLUOROGENIC PHOSPHATE ESTERS OF HYDROXY-PYRENE-SULFONIC ACIDS FOR FLUORIMETRIC DETERMINATION OF PHOSPHATASES

Horst Harnisch, Much, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 572,722, Jan. 20, 1984. This application Oct. 16, 1985, Ser. No. 787,889
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303871
Int. Cl.[4] C12Q 1/42
U.S. Cl. 435—21 6 Claims

1. A composition suitable for the determination of phosphatase activity comprising a fluorimetrically detectable amount of a compound of the formula



in which

M each independently is hydrogen, an alkali metal ion, an ammonium ion, or an ammonium ion substituted by up to four C_1 to C_5-alkyl and/or hydroxyalkyl radicals,

in admixture with a diluent.

4,614,714
USE OF NOVEL L-GLUTAMIC ACID OXIDASE

Hitoshi Kusakabe; Hiroshi Yamauchi, and Yuichiro Midorikawa, all of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Jun. 28, 1983, Ser. No. 509,234
Claims priority, application Japan, Aug. 21, 1982, 57-145346; Aug. 23, 1982, 57-146707
Int. Cl.[4] C12Q 1/26; C12N 9/06; C12M 1/40, 1/34
U.S. Cl. 435—25 10 Claims

1. A method for analysis of L-glutamic acid, which comprises acting L-glutamic acid oxidase with L-glutamic acid in a sample to be analyzed in the presence of oxygen and water, and detecting the consumption of oxygen or the formation of hy-

drogen peroxide, ammonia or α-ketoglutaric acid accompanying the reaction,

wherein said L-glutamic acid oxidase is an L-amino acid oxidase having activity of oxidative deamination of the α-amino group of L-glutamic acid in the presence of water and oxygen to form α-ketoglutaric acid, ammonia and hydrogen peroxide; having a substrate specificity for L-glutamic acid substantially without acting on L-glutamine and L-histidine; and having the following properties:

(a) stable in the pH range from 5.5 to 10.5 under maintenance conditions of 37° C. and 60 minutes;

(b) stable in the temperature range of up to 65° C. under maintenance conditions of pH 5.5 and 15 minutes;

(c) optimum activity in the pH range from 7 to 8.5;

(d) is not inactivated by cupric chloride in a concentration of 1.0 mM at pH 7.4;

(e) contains 2 mols of flavin adenine dinucleotide per mol of the oxidase as a coenzyme; and

(f) a molecular weight of 135,000±10,000 as estimated by gel filtration.

4,614,715

PREDICTIVE TEST FOR IMPENDING OVULATION IN MAMMALS

John C. M. Tsibris, Hanover Park, and William N. Spellacy, Chicago, both of Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Continuation-in-part of Ser. No. 378,134, May 14, 1982, abandoned. This application Apr. 30, 1984, Ser. No. 605,982

Int. Cl.[4] C12Q *1/28*

U.S. Cl. 435—28 7 Claims

1. A method for predicting impending ovulation in human females using a serial assay for guaiacol peroxidase levels in cervical mucus comprising obtaining a sample of cervical mucus, extracting said sample to provide a guaiacol peroxidase component and assaying said guaiacol peroxidase contained therein, said guaiacol peroxidase showing an abrupt decrease in guaiacol peroxidase level at the time of impending ovulation.

4,614,716

FILTER CELL FOR ELECTROCHEMICALLY MEASURING ENZYME CONCENTRATIONS

Gilson H. Rohrback, and Herbert P. Silverman, both of Seattle, Wash., assignors to Rohrback Technology Corporation, Seattle, Wash.

Filed Dec. 14, 1984, Ser. No. 681,789

Int. Cl.[4] C12Q *1/06*

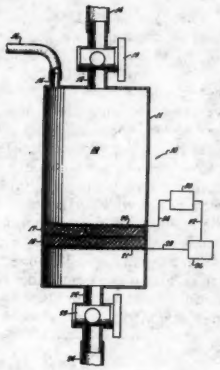
U.S. Cl. 435—39 9 Claims

1. A cell for use in determining the concentration of an enzymatic agent in a liquid sample comprising:

a receptacle for receiving said sample,

filter means within said receptacle for concentrating said agent in said filter means,

electrodes operatively disposed about said filter means, and



means for connecting said electrodes to an electrical circuit adapted for measuring the effect of said sample on said electrical circuit.

4,614,717

PROCESS FOR CULTIVATION OF ORGANISMS WHEREIN A UNIFORM PROTEIN FROM MICROORGANISMS IS ENZYMATICALLY DEGRADED

Traudel Kachholz, Kronberg; Udo Scharf, Kelkheim, and Merten Schlingmann, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 599,159, Apr. 11, 1984, abandoned. This application Feb. 28, 1985, Ser. No. 706,519

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313330

Int. Cl.[4] C12P *21/06*

U.S. Cl. 435—69 42 Claims

1. A process for cultivation of organisms, wherein a uniform protein from a microorganism is subjected to enzymatic degradation and to separation of the fraction up to 2000 dalton, which is then utilized as a peptone in said cultivation of organisms.

4,614,718

SYNTHESIS OF SUGAR OR SUGAR-ALCOHOL FATTY ACID ESTERS

Hajime Seino, Tokyo; Tsuyoshi Uchibori, Yokohama; Sachiko Inamasu, Tokyo, and Toshiyuki Nishitani, Ohmihachiman, all of Japan, assignors to Dai-Ichio Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Aug. 14, 1984, Ser. No. 640,892

Claims priority, application Japan, Aug. 23, 1983, 58-154277; Apr. 25, 1984, 59-84777

Int. Cl.[4] C12P *19/00, 7/62;* C12R *1/01, 1/72, 1/785*

U.S. Cl. 435—72 11 Claims

1. A method for producing a sugar or sugar alcohol ester of a higher fatty acid which comprises the steps of incubating an aqueous mixture of a C_8–C_{22} fatty acid, a sugar or sugar alcohol and a catalytically active amount of a lipolytic enyme derived from the genus Pseudomonus, Enterobacterium, Chromobacterium, Mucor or Candida at a temperature from about 20° C. to about 60° C. for a sufficient time to reach an equilibrium to produce said ester, and recovering said ester from the mixture.

4,614,719

PROCESS FOR PRODUCING RIBAVIRIN

Tetsuro Fujishima, and Yoshiomi Yamamoto, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Apr. 26, 1983, Ser. No. 489,409
Claims priority, application Japan, Apr. 30, 1982, 57-73895; Jun. 11, 1982, 57-100832; Jul. 5, 1982, 57-117385
Int. Cl.[4] C12P *19/28*
U.S. Cl. 435—85 7 Claims

1. A process for producing ribavirin which comprises reacting 1,2,4-triazole-3-carboxamide or a salt thereof with a ribose donor selected from the group consisting of ribose-1-phosphates, nucleosides and nucleotides in the presence of an enzyme source based on a microorganism belonging to the species *Brevibacterium acetylicum* containing an enzyme which catalyzes the reaction to form ribavirin, said reaction taking place at a temperature of 40°–80° C., such that said microorganism is essentially non-proliferative, said reaction being carried out in an aqueous medium under conditions effective to and for a time sufficient to form ribavirin therein and recovering ribavirin formed from said medium.

4,614,720

HYBRID CELL LINE FOR PRODUCING MONOCLONAL ANTIBODY TO A HUMAN T CELL ANTIGEN, ANTIBODY, AND METHODS

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 110,510, Jan. 8, 1980, Pat. No. 4,364,937. This application Oct. 4, 1982, Ser. No. 432,457
Int. Cl.[4] C12N *5/00;* C12P *21/00;* C12R *1/91;* G01N *33/54*
U.S. Cl. 435--240 1 Claim

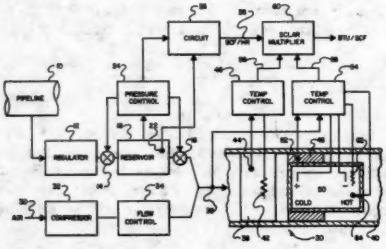
1. A hybridoma having the identifying characteristics of ATCC CRL 8027.

4,614,721

HEAT RECOVERY CALORIMETER

Ira B. Goldberg, Thousand Oaks, Calif., assignor to Rocwell, El Segundo, Calif.

Filed Dec. 10, 1984, Ser. No. 680,193
Int. Cl.[4] G01N *25/30*
U.S. Cl. 436—147 11 Claims



1. A method of measuring the heat value of a known quantity of a gas, comprising the steps of:

receiving the gas and air in a chamber;

measuring the temperature of the gas and air prior to combustion;

contacting the gas and air with a catalyst filling the cross-sectionaly area of the chamber to cause the combustion of the gas;

measuring the temperature of the catalyst;

heating the catalyst to maintain the catalyst at a predetermined temperature;

recording the amount of heat supplied to the catalyst;

absorbing heat from the products of the combustion in a heat sink in the chamber;

measuring the temperature of the heat sink;

removing heat from the heat sink to maintain the heat sink at a predetermined temperature;

recording the amount of heat removed from the heat sink; and

manipulating means and thereby calculating the amount of heat produced by the quantity of gas by multiplying the heat supplied to the catalyst by a first calibration factor, multiplying the heat removed from the heat sink by a second calibration factor, and summing the two calibrated heat values.

5. A catalytic calorimeter for measuring the heat value of a known quantity of a gas, comprising:

a chamber for receiving the gas and air;

a catalyst within the chamber and filling the cross-sectional area of the chamber for causing the combustion of the gas and air;

a first temperature sensor for providing a signal indicating the temperature of the gas and air prior to combustion;

a second temperature sensor for providing a signal indicating the temperature of the catalyst;

a heater for heating the catalyst;

a first temperature controller connected to the second temperature sensor and the heater for maintaining the catalyst at a predetermined temperature;

a heat sink within the chamber and filling the cross-sectional area of the chamber for absorbing heat from the products of the combustion of the gas;

a third temperature sensor for providing a signal indicating the temperature of the heat sink;

a cooling device for removing heat from the heat sink;

a second temperature controller connected to the third temperature sensor and the cooling device for maintaining the heat sink at a predetermined temperature; and

an output device for receiving as inputs the quantity of the gas, the amount of heat supplied to the catalyst, and the amount of heat removed from the heat sink and calculating the amount of heat produced by the quantity of gas by multiplying the heat supplied to the catalyst by a first calibration factor, multiplying the heat removed from the heat sink by a second calibration factor, and summing the two calibrated heat values.

4,614,722

METHOD AND APPARATUS FOR MEASURING THE DEGREE OF REACTION BETWEEN ANTIGENS AND LEUKOCYTE CELLULAR ANTIBODIES

Mark J. Pasula, 369 NE. 116 St., Miami, Fla. 33161

Filed Nov. 1, 1983, Ser. No. 547,767
Int. Cl.[4] G01N *33/566;* A61K *39/36*
U.S. Cl. 436—501 17 Claims

1. A method for determining the degree of reaction between an antigen and at least a first and a second blood sample drawn from a single source, the method comprising the steps of:

counting a number of white blood cells in said first blood sample;

mixing said antigen with said second blood sample to form a mixture, and thereby allow said antigen to react with said white blood cells of said second blood sample;

counting a number of unreacted and reacted white blood cells in said mixture; and

comparing said number of said white blood cells counted in said first blood sample with said number of unreacted and reacted white blood cells counted in said mixture, to determine thereby if said antigen has reacted with said white blood cells in said second blood sample.

4,614,723

PORPHYRIN DERIVATIVES AS FLUORESCENT MARKERS FOR IMMUNOASSAYS

Dieter Schmidt, Basel, and Hans Steffen, Arisdorf, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

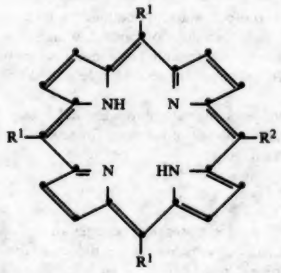
Filed May 23, 1984, Ser. No. 613,127

Claims priority, application Switzerland, Jun. 3, 1983, 3045/83

Int. Cl.[4] C07D *487/22*

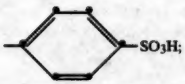
U.S. Cl. 436—536 24 Claims

1. A porphyrin compound of the formula:

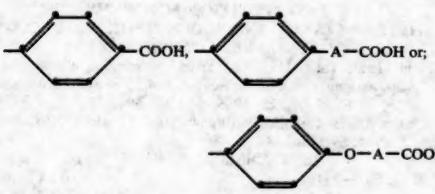


wherein

R^1 is

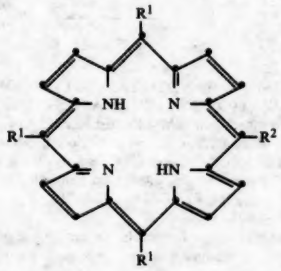


R^2 is



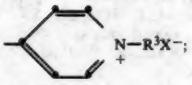
A is (C_{1-8})-alkylene, and the salts thereof, wherein said salts are formed from inorganic or organic bases.

20. A fluorescent antibody consisting essentially of, an antibody specific to an antigen to be detected, and, conjugated to said antibody, a fluorescent compound of the formula

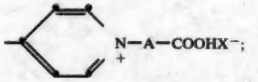


wherein

R^1 is



R^2 is



X^- is selected from the group consisting of halogen ions, benzene sulfonate ions, p-toluenesulfonate ions, (C_{1-12})-alkylsulfonate ions and (C_{1-12})-alkyl sulphate ions; R^3 is (C_{1-4})-alkyl.

4,614,724

POLYCRYSTALLINE SINTERED COMPACTS BASED ON EUROPIUM HEXABORIDE AND PROCESS FOR THEIR MANUFACTURE

Heinrich Knoch, Waltenhofen-Lanzen; Karl A. Schwetz, Sulzberg; Alfred Lipp, Bad Worishofen, and Eckhart Bechler, Kempten, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,862

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1983, 3301841

Int. Cl.[4] C04B *35/56, 35/58, 35/68*

U.S. Cl. 501—87 16 Claims

1. A polycrystalline sintered compact based on europium hexaboride having a density of at least about 85% of the theoretical density of the composition, comprising europium hexaboride, from about 0.1 to 10% by weight of boron carbide having a total of Eu+B+C of at least about 98.5% by weight and having a homogeneous microstructure with a mean grain size of less than about 20 μm, in which, in addition to the crystalline phase corresponding to the formula

$$EuB_{6-x}C_x$$

in which x has values of from 0 to 0.25, boron carbide can be detected as a separate, finely divided, crystalline phase.

4,614,725

ALUMINA PORCELAIN COMPOSITION

Minato Ando; Masaaki Ito, and Fumio Mizuno, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Japan

Filed Sep. 23, 1985, Ser. No. 778,652
Claims priority, application Japan, Sep. 22, 1984, 59-199099
Int. Cl.[4] C04B *35/46*
U.S. Cl. 501—136 2 Claims

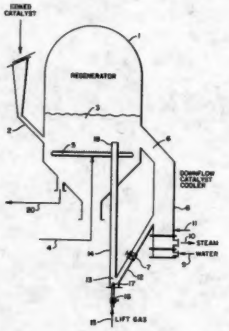
1. An alumina porcelain composition consisting of a main component made of from 96 to 99.5 mol% Al_2O_3 and from 4 to 0.5 mol% of $CaTiO_3$, and MgO as an auxiliary component, said MgO being present in an amount of 0.05 to not more than 1 part by weight per 100 parts by weight of the main component.

4,614,726

PROCESS AND APPARATUS FOR COOLING DURING REGENERATION OF FLUID CRACKING CATALYST

Paul W. Walters, Ashland; H. Anthony Raiche, Russell, both of Ky.; Ronald L. Harness, and Genaro M. Quodala, both of Huntington, W. Va., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 21, 1985, Ser. No. 747,461
Int. Cl.[4] B01J *38/36, 38/30;* C10G *11/18;* F27B *15/08*
U.S. Cl. 502—41 7 Claims



1. A process for regeneration of coke contaminated fluid cracking catalyst comprising in combination the steps of:

A. maintaining a dense fluid bed of hot catalyst in a regeneration zone at a temperature in the range of 649° C. to 787° C. (1200° F. to 1450° F.), providing an oxygen containing regeneration gas injection point within said dense fluid bed and passing coke contaminated catalyst into said dense fluid bed at a point above the said regeneration gas injection point;

B. withdrawing a controlled stream of said catalyst from said dense fluid bed at a point above said regeneration gas injection point and passing said stream through a downflow indirect heat exchange zone to cool said catalyst;

C. passing cooled catalyst now at a temperature in the range of 593° C. to 704° C. (1100° F. to 1300° F.) to the bottom of a gas lift zone located in approximately the same horizontal plane as said heat exchange zone;

D. passing the cooled catalyst by vertical accelerated gas drive upwardly through the gas lift zone at a velocity of 15 to 30 feet per second by employing a lift gas separate from regeneration gas; and

E. lifting a controlled quantity of cooled catalyst up into the dense bed of hot catalyst in said regeneration zone, above the said regeneration gas injection point whereby hot catalyst is cooled by mixing with the cooled catalyst.

6. A process according to claim 1 wherein fluidized gas is additionally supplied to said indirect heat exchange zone.

7. A process according to claim 1 wherein indirect heat exchange zone communicates with the bottom of said gas lift zone through a function into which lift gas is injected.

4,614,727

POLYMERIZATION CATALYST

Paolo Longi; Umberto Giannini, both of Milan, and Romano Mazzocchi, Pernate, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 543,520, Jan. 23, 1975, abandoned, which is a continuation of Ser. No. 322,986, Jan. 12, 1973, abandoned, which is a continuation of Ser. No. 21,196, Mar. 19, 1970, abandoned. This application Feb. 14, 1985, Ser. No. 701,530
The portion of the term of this patent subsequent to Nov. 26, 1991, has been disclaimed.
Int. Cl.[4] C08F *4/64*
U.S. Cl. 502—105 15 Claims

1. Polymerization catalysts obtained by mixing

(A) a catalyst-forming component which is a hydride or organometallic compound of a metal belonging to Groups I to III, inclusive, of the Mendelyeev Periodic System with

(B) a catalyst-forming component which is the product obtained by dispersing a titanium compound having the general formula

$$(NR_4)_pTi_mX_{(n.m)+p}$$

in which the Rs represent hydrogen or hydrocarbon radicals; the $X_{(n.m)}$ substituents are halogen atoms or, in part, OR′ groups in which R′ is an organic radical; n is the titanium valency and m and p are the whole numbers 1, 2 or 3; on a carrier essentially consisting of an anhydrous magnesium dihalide in an active form characterized in that in its X-rays spectrum the diffraction line of highest intensity that appears in the X-rays spectrum of the normal magnesium dihalide decreases in intensity and in its place a halo appears.

4,614,728

CATALYST COMPOSITION FOR PRODUCING ETHYLENE GLYCOL AND PROCESS FOR PRODUCING THE CATALYST COMPOSITION

Koichi Hirai; Taizo Uda, and Yasuo Nakamura, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jan. 25, 1985, Ser. No. 694,973
Claims priority, application Japan, Jan. 27, 1984, 59-12009; Feb. 3, 1984, 59-17161
Int. Cl.[4] B01J *21/08, 23/72*
U.S. Cl. 502—244 16 Claims

1. A hydrogenation catalyst composition composed of a reduction product of a copper-containing material formed by contacting an aqueous solution of ammine/copper complex with a carrier, characterized in that the carrier is a hydrolyzed product obtained by hydrolyzing silicate ester in the presence of ammonia, and subjecting the resulting copper-containing hydrolyzed product to a reducing treatment.

4,614,729

SUPPORTED ORGANOMETALLIC COMPOUNDS FOR UTILIZATION IN PURIFICATION OF FLUIDS

Janet E. Crawford, No. White Plains; Ronald A. Epstein, Yonkers, both of N.Y., and Kelly B. Triplett, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 26, 1984, Ser. No. 665,239
Int. Cl.[4] B01J *31/12, 31/14*
U.S. Cl. 502—401 37 Claims

1. A purifying agent for fluids comprising a granular metal oxide-supported organometallic compound, wherein the metal oxide has a particle size of from about 0.16 cm to about 1.3 cm.

4,614,730
STABILIZED INSULIN PREPARATIONS AND A PROCESS FOR PREPARATION THEREOF

Philip E. Hansen, Copenhagen; Jens J. V. Brange, Klampenborg, and Svend Havelund, Hvidovre, all of Denmark, assignors to Novo Industri A/S, Denmark

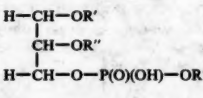
Continuation of Ser. No. 437,573, Oct. 29, 1982, abandoned. This application Jul. 31, 1984, Ser. No. 635,485

Claims priority, application Denmark, Oct. 30, 1981, 4786/81; Jul. 20, 1982, 3247/82

Int. Cl.[4] A61K *37/26*

U.S. Cl. 514—3 **2 Claims**

1. A process for producing an insulin solution of pH within the range of about pH 6.5–8 stabilized against interface polymerization, stabilization being ascertainable by submitting the insulin solution to shaking and measuring the time before opalescence appears in the insulin solution; said stabilized insulin solution being adapted for parenteral administration by portable or implantable system for continuous infusion of insulin, which process comprises mixing insulin with a phospholipid in a phospholipid to insulin weight ratio of 1:5 to 1:10,000, the phosphlolipid formula being:



wherein R′ and R″ are the same or different each being selected from the group consisting of hydrogen, higher alkylcarbonyl, alkenylcarbonyl, alkadienylcarbonyl, alkatrienylcarbonyl and alkatetraenylcarbonyl, with the proviso that both R′ and R″ are not hydrogen, and R‴ is selected from the group consisting of 2-(trimethylammonio)ethyl, 2-aminoethyl, 2-carboxy-2-aminoethyl, 2,3-dihydroxpropyl and 2,3,4,5,6-pentahydroxycyclohexyl, in the presence of water, and optionally with a zinc salt, a preservative, an agent rendering the insulin solution isotonic, and a buffering agent so as to obtain a concentration of phospholipid of 10–200 μg/ml of stablilized insulin solution, the insulin in solution being essentially outside any liposomes formed by said phospholipid.

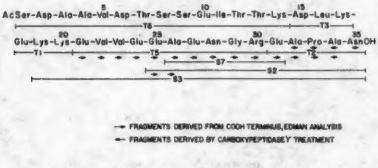
4,614,731
PEPTIDE HAVING IMMUNOPOTENTIATING ACTIVITY SIMILAR TO THYMOSIN ALPHA$_1$

Bernard L. Horecker, New York, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 532,418, Sep. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 511,821, Jul. 8, 1983, abandoned. This application Jun. 10, 1985, Ser. No. 742,827

Int. Cl.[4] A61K *37/24, 37/02;* C07K *7/48*

U.S. Cl. 514—12 **3 Claims**



1. A peptide of the sequence:

AcSer—Asp—Ala—Ala—Val—Asp—Thr—Ser—Ser—Glu—
—Ile—Thr—Thr—Lys—Asp—Leu—Lys—Glu—Lys—Lys—
—Glu—Val—Val—Glu—Glu—Ala—Glu—Asn—Gly—
—Arg—Glu—Ala—Pro—Ala—AsnOH

and the pharmaceutically acceptable acid and base addition salts thereof.

4,614,732
N^6-ACENAPHTHYL ADENOSINES AND ANALOGS THEREOF

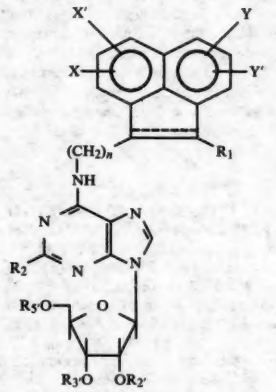
Harriet W. Hamilton; William C. Patt, both of Chelsea, and Bharat K. Trivedi, Canton, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 665,195, Oct. 26, 1984, abandoned. This application Sep. 5, 1985, Ser. No. 771,591

Int. Cl.[4] A61K *31/70;* C07H *19/06*

U.S. Cl. 514—46 **12 Claims**

1. A compound of the formula



wherein:

— is optionally a double or single bond;

n=0–4;

X, X′, Y, Y′ are each independently H, OH, halogen, amino, nitro, lower alkyl, trifluoromethyl or lower alkoxy;

R_1 is H, alkyl, OH or lower alkoxy;

R_2 is H or halogen;

R_2', R_3', and R_5' are each independently hydrogen, alkanoyl, benzoyl, benzoyl substituted by lower alkyl, lower alkoxy, halogen or trifluoromethyl, or R_2' and R_3' together may be 2′, 3′-isopropylidene, or a pharmaceutically acceptable acid addition salt thereof.

11. A pharmaceutical composition for treating hypertension comprising an anti hypertensive effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

4,614,733
POLYSACCHARIDES PHARMACEUTICAL COMPOSITIONS AND THE USE THEREOF

Chikao Yoshikumi; Takayoshi Fujii; Masahiko Fujii; Minoru Ohara; Akira Kobayashi, all of Tokyo, and Tsuneo Akatsu, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 336,263, Dec. 31, 1981, abandoned, which is a continuation-in-part of Ser. No. 71,287, Aug. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 870,803, Jan. 19, 1978, abandoned. This application Aug. 31, 1984, Ser. No. 646,433

Int. Cl.[4] A61K *31/715;* C08B *37/00*

U.S. Cl. 514—54 **11 Claims**

5. A method of treating mammalian gastro-intestinal cancer, comprising the step of administering to a mammal bearing said gastrointestinal cancer a therapeutically effective amount of an antitumor agent containing a polysaccharide as an active ingredient, said polysaccharide having a molecular weight of from 5,000 to 300,000 as determined by ultracentrifugation, giving color reactions characteristic of saccharides in α-naphthol-sulfuric acid reaction, indole-sulfuric acid reaction, phenol-sulfu-

ric acid reaction, and tryptophane-sulfuric acid reaction, containing 43.5 to 45.3% by weight of carbon, 5.7 to 6.7% by weight of hydrogen and the balance of oxygen and being free of nitrogen, the saccharide units of said polysaccharide being composed principally of D-glucose bonded together entirely by α-bonding and having a structure in which $\rightarrow{}^4G^1\rightarrow$ is within the range of 3.5 to 8.5, $\rightarrow{}^3G^1\rightarrow$ is less than 2, $\rightarrow{}^4G_6{}^1\rightarrow$ is within the range of 0.5 to 2.0, $\rightarrow{}^4G_3{}^1\rightarrow$ is within the range of 0.1 to 2.5 and $\rightarrow{}^3G_6{}^1\rightarrow$ is less than 0.8 when the non-reducing endgroup ($G^1\rightarrow$) of monosaccharide as determined in methylation-hydrolysis test according to Haworth's method is indexed as 1, the specific rotation $[\alpha]_D^{25}$ of said polysaccharide being $+70°$ to $+180°$, said polysaccharide showing a specific absorption at 840 cm^{-1} in its infrared absorption spectrum and showing absorptions at 3.7±0.1, 3.8±0.1, 5.0±0.1, and 5.4±0.1 ppm but not showing any absorptions in the range of 4.4 to 4.9 ppm in its nuclear magnetic resonance absorption spectrum, and said polysaccharide being soluble in water but insoluble in pyridine, chloroform, and hexane.

4,614,734

PESTICIDAL PHOSPHOROAMIDO(D)THIOATES

Joel R. Smolanoff, Chalfont, Pa.; J. Michael Fitzpatrick, Sao Paulo, Brazil, and Janet Ollinger, Chalfont, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

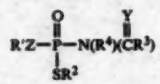
Division of Ser. No. 391,072, Jun. 22, 1982, Pat. No. 4,544,553, which is a continuation-in-part of Ser. No. 276,780, Jun. 24, 1982, abandoned. This application Jun. 25, 1984, Ser. No. 624,310

The portion of the term of this patent subsequent to Oct. 1, 2002, has been disclaimed.

Int. Cl.[4] ***A01N 57/08, 57/02; C07F 9/24***

U.S. Cl. 514—101 **38 Claims**

1. A compound having the formula



wherein:

R^1 is unsubstituted or substituted (C_1–C_4)alkyl wherein the substituent can be from one to four of the same or different bromo, chloro or fluoro groups;

R^2 is unsubstituted straight or branched chain (C_2–C_5)alkyl;

R^3 is hydrogen;

R^4 is unsubstituted or substituted (C_3–C_6)alkenyl wherein the substituent can be from one to three of the same or different phenyl, alkyl, carbo(C_1–C_4)alkoxy, bromo, chloro or fluoro groups; (C_3–C_6)alkynyl; unsubstituted or substituted phenyl wherein the substituent can be from one to five of the same or different halo or from one to three of the same or different alkyl, haloalkyl containing one to three of the same or different halo, alkoxy, alkylthio, cyano, nitro, amino, or mono- or dialkylamino, wherein the alkyl moiety is straight or branched chain and contains from one to three carbon atoms; or unsubstituted or substituted phenyl(C_1–C_3)alkyl wherein the substituent on the phenyl ring can be from one to five of the same or different halo or from one to three of the same or different alkyl, haloalkyl containing one to three of the same or different halo, alkoxy, alkylthio, benzyloxy, methylenedioxy, cyano, nitro, amino, or mono— or dialkylamino groups, wherein the alkyl moiety is straight or branched chain and contains from one to three carbon atoms; and Y and Z are O.

4,614,735

S-PROPARGYL TRITHIOPHOSPHONATE INSECTICIDES FOR USE IN SOIL

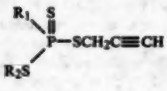
Alexandra B. Shortt, Houston, Tex., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 24, 1984, Ser. No. 685,581

Int. Cl.[4] **A01N** ***57/12; C07F 9/40***

U.S. Cl. 514—135 **12 Claims**

1. A method of controlling soil-borne insects comprising applying to said insects, to soil, or to seeds prior to planting, an insecticidally effective amount of a compound having the formula



in which R_1 is methyl or ethyl and R_2 is ethyl or a C_3–C_5 branched alkyl group other than 1,2-dimethylpropyl.

4,614,736

NOVEL ANTI-INFLAMMATORY TREATMENT

Francoise Delevallee, Vincennes; Roger Dersedt, Pavillons-sous-Bois, and Simone Jouquey, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 1, 1985, Ser. No. 718,175

Claims priority, application France, Apr. 3, 1984, 84 05222

The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.

Int. Cl.[4] **C07J** ***5/00***

U.S. Cl. 514—179 **10 Claims**

1. A method of treating inflammation of the colon and rectum of warm-blooded animals comprising administering to the colon and rectum of warm-blooded animals an anti-inflammatorily effective amount of 9α,11β-dichloro- 16α-methyl-21-oxycarbonyldicyclohexyl-methoxy-$\Delta^{1,4}$-pregnadiene-3,20-dione.

8. An anti-inflammatory composition comprising an anti-inflammatorily effective amount of 9α,11β-dichloro-16α-methyl-21-oxycarbonyldicyclohexylmethoxy-$\Delta^{1,4}$-pregnadiene-3,20-dione and an inert pharmaceutical carrier capable of releasing the said compound in the colon and/or rectum.

4,614,737

2-DIOXACYCLOALKYLTHIOPENEM DERIVATIVES

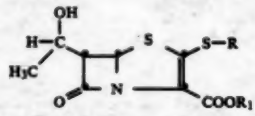
Ernest S. Hamanaka, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 541,854, Oct. 14, 1983, abandoned. This application Sep. 13, 1984, Ser. No. 649,517

Int. Cl.[4] **C07D** ***499/00***; **A61K** ***31/425***

U.S. Cl. 514—193 **42 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein R is

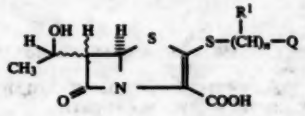
A is carbonyl, thiocarbonyl or methylene;
B is alkylene having 2–5 carbon atoms;
alk is alkylene having 1–6 carbon atoms;
R_1 is hydrogen or a group which results in an ester which is hydrolyzable in vivo; and
n is zero or one.

4,614,738
2-(N-HETEROCYCLOALIPHATICTHIO)PENEMS

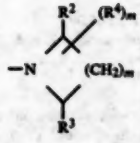
Vlyyoor M. Girijavallabhan, Parsippany; Ashit K. Ganguly, Upper Montclair; Patrick A. Pinto, Mine Hill, and Richard W. Versace, Ringwood, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Mar. 25, 1983, Ser. No. 478,620
Int. Cl.[4] C07D 499/00; A61K 31/425
U.S. Cl. 514—194 27 Claims

1. Compounds represented by the formula



wherein
Q is



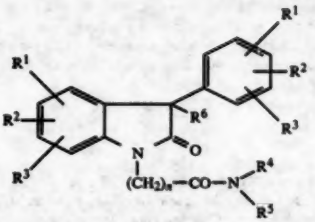
R^1 is hydrogen, lower alkyl, carboxy, carbamyl, cyano, hydroxy, amino, lower alkylthio, fluoro, lower alkoxy, or lower alkanoyloxy, provided that when R^1 is attached to a carbon atom adjacent to S or N, R^1 is not hydroxy, amino, lower alkylthio, fluoro, lower alkoxy, or lower alkanoyloxy;
R^2 and R^3 are independently selected from hydrogen, lower alkyl, amino(lower)alkyl, mono- and di-(lower)alkylamino(lower)alkyl, carboxy(lower)alkyl, carboxy, hydroxy(lower)alkyl, cyano, oxo, carbamyl, and mono- or di-(lower)alkylcarbamyl;
R^4 is R^2, sulfo(lower)alkyl, hydroxy, amino, mono- and di-(lower)alkylamino, (lower)alkylsulfonate, sulfamyl, halogeno, hydroxylimino, or lower alkoxyimino;
m and n are 1 to 4; and
the pharmaceutically acceptable salts and esters thereof, in racemic or optically active form.

4,614,739
OXINDOLE DERIVATIVES, PHARMACEUTICAL COMPOSITIONS AND USE

Heinz Kuch, Frankfurt am Main, and Hansjörg Kruse, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 366,321, Apr. 7, 1982, Pat. No. 4,542,148.
This application Jun. 18, 1985, Ser. No. 745,884
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114351
Int. Cl.[4] A61K 31/405, 31/535; C07D 401/06, 413/06
U.S. Cl. 514—212 6 Claims

1. A compound of the formula I


(I)

in which n is 1, 2 or 3; R^1, R^2 and R^3 are identical or different and independently of one another are hydrogen, halogen, straight-chain or branched alkyl having 1 to 4 C-atoms, trifluoromethyl, methylenedioxy, alkoxy having 1 to 3 C-atoms, or nitro; R^4 and R^5 together with the N-atom form a pyrrolidino, piperidino, hexahydroazepino or morpholino radical, which is unsubstituted or substituted by alkyl or alkoxyalkyl having 1 to 5 C-atoms, N-alkylpiperazino having 1 to 5 C-atoms in the alkyl radicals, N-phenylpiperazino the phenyl portion of which is unsubstituted, monosubstituted, disubstituted or trisubstituted by R^1, N-alkanoylpiperazino having 1 to 5 C-atoms in the alkyl portion and N-benzoylpiperazino the phenyl portion of which is unsubstituted, monosubstituted, disubstituted or trisubstituted by R^1; and R^6 is hydrogen, alkyl having 1 to 5 C-atoms or hydroxyl, or a pharmaceutically acceptable salt thereof with an acid; with the proviso that no phenyl group is substituted by trinitro or di- or tri-adjacent t-butyl.

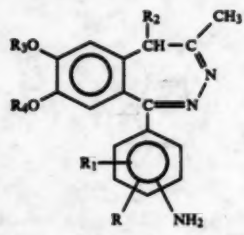
5. A neuroanabolic composition comprising an effective amount of a compound as defined in claim 1 and an acceptable pharmaceutical excipient, diluent or auxiliary therefor.

4,614,740
5H-2,3-BENZODIAZEPINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Tibor Láng; Jeno Korösi; Ferenc Andrási; Péter Botka; Tamás Hámori; Pál Berzsenyi; Katalin Goldschmidt; Gábor Zólyomi; István Elekes, and Zsuzsanna Láng née Rihmer, all of Budapest, Hungary, assignors to Egis Gyogyszergyar, Budapest, Hungary

Filed Jul. 26, 1985, Ser. No. 759,169
Claims priority, application Hungary, Jul. 27, 1984, 2251/2882/84
Int. Cl.[4] A61K 31/35; C07D 243/00
U.S. Cl. 514—221 7 Claims

1. A 5H-2,3-Benzodiazepine of the formula I and pharmaceutically acceptable acid addition salts thereof,


I

wherein
R and R_1 each represent hydrogen, chlorine, C_{1-4} alkyl or C_{1-4} alkoxy,
R_2 stands for hydrogen or C_{1-4} alkyl,
R_3 and R_4 each denote C_{1-4} alkyl, or combined they denote methylene.

5. A pharmaceutical composition for exerting antiaggresive,

anxiolytic, narcosis potentiating and hypnotic effects which comprises: an effective amount of at least one compound of the formula I as defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof, together with one or more pharmaceutically carrier(s), diluent(s) and/or additives.

4,614,741

DEPOT ANTIINFLAMMATORY AGENTS

Hans-Dieter Dell, Berg.-Gladbach; Bernhard Pelster, St. Augustin; Reinhold Kraus, Cologne, and Detlef Schierstedt, St. Augustin, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co., KG, Cologne, Fed. Rep. of Germany

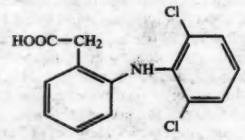
Filed Jun. 20, 1984, Ser. No. 622,423

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324193

Int. Cl.[4] A61K *31/40, 31/54, 31/195*

U.S. Cl. 514—222 4 Claims

1. An injectable antiinflammatory agent containing 10–70% by weight of active compound of the formula



and 10–60% by weight of suspending agent selected from the group consisting of biscoleo, isopropyl myristate, ethyl oleate, castor oil, sesame oil, arachis oil, cottonseed oil, almond oil, olive oil, neatsfoot oil, neutral oil and maize oil.

4,614,742

FLUORINATED ISOPHTHALONITRILE COMPOUND AND NONMEDICAL FUNGICIDE CONTAINING THE SAME

Nobuo Ishikawa, Yokohama; Akio Takaoka, Kawasaki; Takashi Isono, Tokyo; Masatoshi Motoyoshi, Tokyo, and Kazuhiro Kojima, Tokyo, all of Japan, assignors to S.D.S. Biotech K.K., Tokyo, Japan

Filed Aug. 29, 1985, Ser. No. 770,481

Int. Cl.[4] A01N *43/84, 37/34;* C07C *121/78*

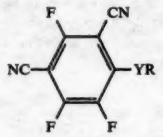
U.S. Cl. 514—237 4 Claims

1. A fluorinated isophthalonitrile compound having the general formula

(I)

wherein Y is —O, —S, or —N(R′), R and R′ are independently hydrogen, an alkyl group, an alkenyl group, an alkynyl group, a haloalkyl group, an alkoxyl group, an alkoxyalkyl group, a phenyl group which may be substituted, a tetrahydrofurfuryl group, or a cycloalkyl group, provided that, in the case of Y=—N(R′), R and R′ or Y may be a heterocyclic compound residue.

3. A nonmedial fungicide comprising, as an effective ingredient, a fluorinated isophthalonitrile having the general formula



(I)

wherein Y is —O, —S, or —N(R′), R and R′ and independently hydrogen, an alkyl group, an alkenyl group, an alkynyl group, a haloalkyl group, an alkoxyl group, alkoxyalkyl group, a phenyl group which may be substituted, a tetrahydrofurfuryl group, or a cycloalkyl group, provided that, in the case of Y=—N(R′), R and R′ or Y may be a heterocyclic compound residue.

4,614,743

METHODS OF TREATING PAIN AND INFLAMMATION WITH 4,7-DIMETHYL-2-(4-PYRIDINYL)-1,2,4,-TRIAZOLO[1,5-A]PYRIMIDIN-5(4H)-ONE OR THE PHARMACEUTICALLY ACCEPTABLE SALTS OR SOLVATES THEREOF

Richard E. Chipkin, Bloomfield, and Joseph T. Witkowski, Morris Township, Morris County, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

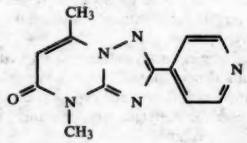
Filed Dec. 27, 1983, Ser. No. 566,093

The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.

Int. Cl.[4] A61K *31/505;* C07D *487/04*

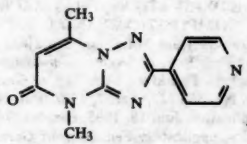
U.S. Cl. 514—258 8 Claims

1. A method for treating pain in a mammal which comprises administering a pharmaceutical composition which comprises an analgesic effective amount of 4,7-dimethyl-2-(4-pyridinyl)-1,2,4-triazolo[1,5-a]pyrimidin-5(4H)-one, having the structural formula



or the pharmaceutically acceptable salts thereof or a pharmaceutically acceptable solvate thereof in combination with a pharmaceutically acceptable carrier, to said mammal.

5. A method of treating inflammation in a mammal which comprises administering a pharmaceutical composition which comprises an anti-inflammatory effective amount of 4,7-dimethyl-2-(4-pyridinyl)-1,2,4-triazolo[1,5-a]pyrimidin-5(4H)-one, having the structural formula



or the pharmaceutically acceptable salts thereof or a pharmaceutically acceptable solvate thereof in combination with a pharmaceutically acceptable carrier, to said mammal.

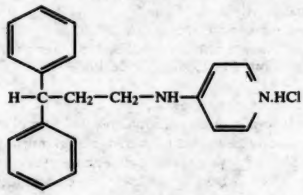
4,614,744

USE OF FENPYRAMIN AS PLATELET-ANTIAGGREGATING, VASODILATING, ANTITHROMBOTIC AND ANTIANGINOUS MEDICINE

Piero Bellani; Gaetano Clavenna, both of Milan, and Rinaldo Pellegrini, Treviso, all of Italy, assignors to RBS Pharma (Roger Bellon Schoum) S.p.A., Milan, Italy

Filed Jul. 17, 1984, Ser. No. 631,825
Claims priority, application Italy, Jul. 25, 1983, 22221 A/83
Int. Cl.[4] A61K *31/44*
U.S. Cl. 514—277 2 Claims

1. Therapeutic use as a platelet-antiaggregating, vasodilating and antianginous medicine of N-(4'-pyridyl)-3,3-diphenyl propylamine hydrochloride (fenpyramin) having formula:



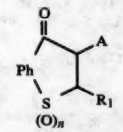
4,614,745

ANTI-ALLERGIC 3-(CARBOXYCARBONYL)AMINO BENZOTHIOPYRAN-4-ONE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

Atso Ilvespää, Allschwil, and Georges Haas, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,632
Claims priority, application Switzerland, Apr. 24, 1984, 2000/84
Int. Cl.[4] C07D *335/06;* A61K *31/38*
U.S. Cl. 514—432 19 Claims

1. A benzothiopyranone of the formula



(I)

in which R_1 represents hydrogen, lower alkyl or lower alkenyl, n represents 0, 1 or 2, Ph represents 1,2-phenylene that is mono- or poly-substituted by lower alkyl, lower alkenyl, lower alkynyl, 3- or 4-membered lower alkylene briding two vicinal carbon atoms, hydroxy-lower alkyl, halo-lower alkyl, hydroxy, lower alkoxy, hydroxy-lower alkoxy, lower alkenyloxy, lower alkylthio, lower alkane-sulphinyl, lower alkanesulphonyl, lower alkanoyl, lower alkanoyloxy, nitro and/or by halogen or is unsubstituted, and A represents a group of the formula —NH—CO—R in which R represents carboxy, lower alkoxycarbonyl, or phenoxycarbonyl that is unsubstituted or mono- or poly-substituted by lower alkyl, lower alkenyl, lower alkynyl, 3- or 4-membered lower alkylene bridging two vicinal carbon atoms, hydroxy-lower alkyl, halo-lower alkyl, hydroxy, lower alkoxy, hydroxy-lower alkoxy, lower alkenyloxy, lower alkylthio, lower alkanesulphinyl, lower alkene-sulphonyl, lower alkanoyl, lower alkanoyloxy, nitro and/or by halogen, and a salt thereof.

18. A pharmaceutical preparation comprising an antiallergically effective amount of a compound of claim 1, or a pharmaceutically acceptable salt thereof, in addition to a customary pharmaceutical adjunct or carrier.

19. A method for the treatment of allergic disorders in warmblooded organisms which comprises administering to such organism an antiallergically effective amount of a compound of formula I of claim 1 or a pharmaceutically acceptable salt thereof.

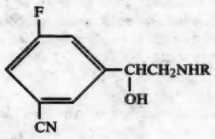
4,614,746

5-FLUOROBENZONITRILE DERIVATIVES FOR INCREASING THE LEAN MEAT TO FAT RATIO AND/OR ENHANCING THE GROWTH RATE OF WARM-BLOODED ANIMALS

Goro Asato, Titusville, and Terence J. Bentley, East Windsor, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

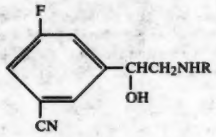
Filed Mar. 21, 1985, Ser. No. 714,240
Int. Cl.[4] A01N *37/34;* C07C *121/80*
U.S. Cl. 514—524 13 Claims

1. A compound of the formula:



wherein R is isopropyl or tert-butyl; or an optical isomer thereof or a non-toxic pharmacologically acceptable acid addition salt of the above-said compound.

4. A method for increasing the lean meat to fat ratio, and/or improving the efficiency of feed utilization, and/or enhancing the growth rate of warm-blooded animals comprising: orally or parenterally administering to said animals an effective amount to achieve at least one of the animal body functions above, of a compound of the formula:



wherein R is isopropyl or tert-butyl; or an optical isomer thereof or a non-toxic pharmacologically acceptable acid addition salt of the above-said compound.

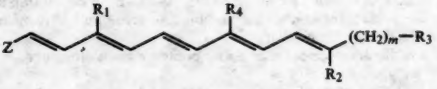
4,614,747

DERIVATIVES OF ALPHA-ALKYL POLYOLEFINIC CARBOXYLIC ACID USEFUL IN THE TREATMENT OF PSORIASIS

Bernard Loev, Scarsdale; Howard Jones, Ossining, and Wan-kit Chan, Yorktown Heights, all of N.Y., assignors to USV Pharmaceutical Corp., Tuckahoe, N.Y.

Division of Ser. No. 518,785, Jul. 29, 1983, Pat. No. 4,523,042.
This application Nov. 29, 1984, Ser. No. 676,352
Int. Cl.[4] C07C *43/15, 43/21, 43/215, 43/188*
U.S. Cl. 514—529 5 Claims

1. Compounds of the structure



wherein

m is 0 to 1, and

R_1 and R_4 are each independently hydrogen or an alkyl group of from 1 to 5 carbon atoms;

R_2 is an alkyl group of from 1 to 5 carbon atoms;
R_3 is C_1–C_5 alkoxy, phenyloxy, naphthyloxy, phenylalkoxy, naphthylalkoxy, retinoyloxy; and
Z is a cyclohexyl, cyclohexenyl, or cyclohexadienyl group substituted with from 0 to 5 C_1–C_5 alkyl groups, an acetyl group or a hydroxyl group; and the pharmaceutically-acceptable salts thereof.

4. A pharmaceutical composition for the treatment of psoriasis and acne in a human host comprising, in combination with at least one pharmaceutically acceptable carrier, an effective amount of a compound of claim 1.

5. A method of treating psoriasis and acne in a human host which comprises administering to said host a therapeutically effective amount of at least one compound of claim 1.

4,614,748

TOPICAL USE COMPOSITION FOR THE TREATMENT OF SEBORRHEA AFFECTIONS OF THE HUMAN SCALP

Miguel M. Taya, and René R. Sala, both of Barcelona, Spain, assignors to Rocador Sociedad Anonima, Spain

Filed Sep. 8, 1981, Ser. No. 300,424
Claims priority, application France, Feb. 19, 1981, 81 03325
Int. Cl.[4] A61K 7/06
U.S. Cl. 514—613 13 Claims

1. A topical use composition for the treatment of seborrhea and dandruff affections of the human scalp, characterised in that the composition contains a therapeutically effective amount of N-hydroxyethylacetamide as active ingredient.

4,614,749

LOW TEMPERATURE CATALYSTS FOR METHANOL PRODUCTION

Richard S. Sapienza, 1 Miller Ave., Shoreham, N.Y. 11786; William A. Slegeir, 7 Florence Rd., Hampton Bays, N.Y. 11946; Thomas E. O'Hare, 11 Geiger Pl., Huntington Station, N.Y. 11746, and Devinder Mahajan, 14 Locust Ct., Selden, N.Y. 11784

Division of Ser. No. 710,879, Mar. 12, 1985, which is a continuation-in-part of Ser. No. 581,935, Feb. 21, 1984, abandoned. This application Dec. 23, 1985, Ser. No. 812,707
Int. Cl.[4] C07C 27/06, 31/04
U.S. Cl. 518—700 7 Claims

1. A process for producing methanol by a low temperature reaction of CO with H_2 in the presence of a slurry catalyst system resulting from combination of:
(a) a complex reducing agent of the type NaH—ROH—M-$(OAc)_2$, where M is selected from the group consisting of Ni, Pd, and Co and R is a lower alkyl group having from 1–6 carbon atoms; and
(b) a carbonyl complex of one of the group VI metals.

4,614,750

RUTHENIUM-COPPER-CONTAINING, ACTIVATED-CARBON-SUPPORTED CATALYST AND PROCESS FOR MAKING ALCOHOL USING SAME

Thomas G. Attig, Aurora; Anne M. Graham, Northfield Center, and Frederick Pesa, Aurora, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 616,968, Jun. 4, 1984, Pat. No. 4,560,672. This application Sep. 23, 1985, Ser. No. 779,218
Int. Cl.[4] C07C 27/06
U.S. Cl. 518—713 18 Claims

1. A process for producing alcohol comprising contacting a gaseous reactant containing carbon monoxide and hydrogen with a catalyst comprising
a ruthenium-copper-containing complex of the formula

$$M_aA_bRuCu_cN_zO_x$$

wherein
M is selected from the group consisting of Ce, Cr, Fe, Mn, and mixtures thereof,
A is an alkali metal, alkaline earth metal or mixture thereof,
a is from 0 to about 1,
b is from 0.002 to about 10,
c is from 0.2 to about 20,
z is from 0 to about 1% by weight,
x is the number of oxygens needed to fulfill the valence requirements of the other elements, said complex being supported by
an activated carbon support having a surface area of at least about 300 square meters per gram.

4,614,751

PROCESS FOR PREPARING IMPROVED WEAK ACID RESINS AND POROUS WEAK ACID RESINS

Yohannes Chonde, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 596,885, Apr. 5, 1984, abandoned. This application Jan. 28, 1985, Ser. No. 695,648
Int. Cl.[4] C08D 5/20; C08F 8/12
U.S. Cl. 521—31 18 Claims

1. A process for preparing weak acid type cation exchange resins by subjecting to caustic hydrolysis a copolymer comprising in polymerized form (1) a major amount ranging from about 70 to about 90 weight percent of an alkyl acrylate monomer which is hydrolyzable under caustic conditions, (2) a minor amount ranging from about 1 to about 20 weight percent of an alkyl acrylate monomer which has a less hydrolyzable character than the hydrolyzable monomer, and (3) an effective amount of a crosslinking monomer thereby producing cation exchange resin which exhibits improved resistance to osmotic shock.

4,614,752

PROCESS AND APPARATUS FOR REMOVING RUBBER AND/OR PLASTIC MATERIAL FROM COMPOSITE BODIES COMPRISING METAL AND AT LEAST ONE OF SAID MATERIALS

Gerhard Fuchs, Kehl-Bodersweier; Roland R. Hertenstein, Lahr, and Hans G. Quick, Ahrensburg, all of Fed. Rep. of Germany, assignors to Fuchs Recycling GmbH & Co., Willstatt-Legelshurst, Fed. Rep. of Germany

Filed Jun. 19, 1985, Ser. No. 746,343
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1984, 3422924
Int. Cl.[4] C08J 11/04, 11/08
U.S. Cl. 521—44.5 4 Claims

1. In a method for the removal of a material selected from the group consisting of rubber, plastic and mixtures thereof, from composite bodies of metal and at least one of said materials, in which the composite body is placed in a reaction vessel, there exposed to the hot vapors of a heated, liquid solvent and, after the dissolutin of the material to be removed, the metal parts are removed from the reaction container, the improvement comprising passing the composite bodies through a first lock into a preheating zone of the reaction vessel, exposing said bodies in said preheating zone to be hot vapors of a solvent for said rubber or plastic material at an absolute gas pressure in the range of 0.5 to 4.0 bar and at a temperature between 50° and 150° C., then immersing said composite bodies in said solvent heated at a temperature of 150° to 550° C. and, after the dissolution of said rubber or plastic material, removing the metal parts from the reation container through a second lock.

2. In a method for the removal of a material selected from the group consisting of rubber, plastic or mixtures thereof, from composite bodies of metal and at least one of said materials, in which the composite bodies are placed in a reaction vessel, there exposed to the hot vapors of a solvent and, after the dissolution of the material to be removed, the metal parts are removed from the reaction vessel, the improvement comprising passing the composite bodies through a first lock into a preheating zone heated by hot gases to a temperature between 50° and 150° C., then exposing said bodies to the hot vapors of

a solvent for said rubber or plastic material heated at a temperature of 150° to 550° C. and at an absolute gas pressure in the range from 0.5 to 4.0 bar (absolute), and, after the dissolution of said rubber or plastic material, removing the metal parts from the reaction container through a second lock.

4,614,753

LIGHT-RESISTANT AND WEATHER-PROOF POLYOLEFIN FOAMS

Werner Kühnel, Neunkirchen-Schöneshof, and Paul Spielau, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Division of Ser. No. 675,359, Nov. 28, 1984, Pat. No. 4,590,221.
This application Feb. 14, 1986, Ser. No. 830,055
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343676
Int. Cl.[4] C08J 9/06
U.S. Cl. 521—85 12 Claims

1. An article having improved light and weather resistance based on a polyolefin foam, said foam being formed by crosslinking by addition of an organic peroxide or by means of radiation crosslinking and foaming by a chemical blowing agent by the action of heat under normal pressure conditions, comprising adding, in addition to any other adjuvants and aids,

(a) phenolic antioxidants,

(b) substituted benzophenones and/or substituted benzotriazoles and

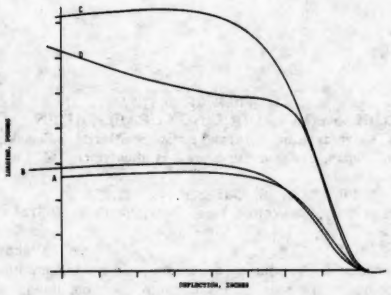
(c) sterically hindered amines to the polyolefin.

4,614,754

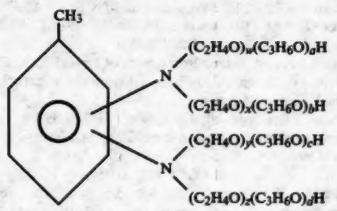
RIGID POLYURETHANE FOAMS WITH CONSTANT OR SLIGHTLY DECREASING STRAIN WITH AN INCREASING STRESS IN COMPRESSION

Donald L. Christman, Grosse Ile, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Sep. 21, 1984, Ser. No. 652,838
Int. Cl.[4] C08G 18/14, 18/32
U.S. Cl. 521—167 3 Claims



1. A rigid polyurethane foam which exhibits nearly constant strain with increasing stress in compression wherein the rigid foam is the reaction product of a mixture of polyether polyols, an organic polyisocyanate, a catalyst and a silicone surfactant wherein said polyol mixture comprises an effective amount of an alkoxylated toluenediamine polyol having a structure of



wherein w, x, y, and z represent numerals from 0 to 2; a, b, c, and d represent numerals from 1 to 5; w+x+y+z is from 2 to 5; a+b+c+d is from 2 to 5 and wherein w+x+y+z-+a+b+c+d is not less than 5 nor more than 9 and a polyether polyol having a functionality from 2 to 8 and a molecular weight range from 200 to 1000.

4,614,755

PROTECTIVE COATING COMPOSITION COMPRISING A BLEND OF POLYVINYL ACETATE, HYDRAULIC CEMENT, EVA, AND LIMESTONE

Jack L. Rodgers, R.D. #2 - Box 573, Seneca, Pa. 16346

Continuation-in-part of Ser. No. 697,958, Feb. 4, 1985, abandoned. This application Jun. 17, 1985, Ser. No. 745,786
Int. Cl.[4] C08K 3/10; C08J 3/20; C08L 31/04
U.S. Cl. 524—5 18 Claims

1. A protective waterproof coating composition suitable for application to concrete and wood surfaces and other types of surfaces to provide the surfaces with increased abrasion and chemical resistance, the composition comprises a blend of hydraulic cement in the range of 5.0 to 18.0 wt. %, 200 mesh limestone in the range of 20 to 50 wt. %, and 0.5 to 6.0 wt. % polyvinyl acetate, the balance of 50 mesh limestone and admixed therewith a solution comprised of 30 to 60 wt. % of a vinyl acetate-ethylene copolymer emulsion, the remainder water, the concentration of blend in solution being in the range of 8 to 25 lbs./gallon of solution.

4,614,756

STABILIZATION COMPOSITION FOR CLEAN, IMPACT-MODIFIED PVC

Leo L. Valdiserri, Little Hocking, Ohio, assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 1, 1985, Ser. No. 761,445
Int. Cl.[4] C08K 5/51
U.S. Cl. 524—147 6 Claims

1. A stabilizer composition adapted for use in stabilizing PVC consisting of a dialkyl tin mercaptide, a zinc salt of a fatty acid and a phosphite.

4,614,757

COLOR DEVELOPER FOR PRESSURE-SENSITIVE RECORDING PAPERS

Theodore Maierson, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 590,842, Mar. 19, 1984, Pat. No. 4,556,687. This application Nov. 8, 1985, Ser. No. 796,310
Int. Cl.[4] B41M 5/16, 5/22
U.S. Cl. 524—333 10 Claims

1. An aqueous solution of a salt of a water soluble amine with 4,4'-dihydroxydiphenyl sulfone.

4,614,758

USE OF PARAFFIN WAXES OR MICROWAXES FOR SILICONE PASTES, AND THE PACKAGING AND USE THEREOF

Peter Schwabe, and Reiner Voigt, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 30, 1985, Ser. No. 728,824

Claims priority, application Fed. Rep. of Germany, May 5, 1984, 3416694

Int. Cl.[4] C08K *5/01*

U.S. Cl. 524—487 15 Claims

1. A paste-like silicone-containing composition which crosslinks comprising

(a) a paraffin wax,

(b) an organopolysiloxane, said organopolysiloxane having two or more vinyl groups when said crosslinking is by an addition system, said organopolysiloxane having two or more hydroxyl groups when said crosslinking is by a condensation system,

(c) a filler,

(d) a crosslinking agent, said crosslinking agent being an organohydridopolysiloxane when said crosslinking is by an addition system,

(e) a paraffin oil and

(f) a catalyst, said catalyst being a catalyst to accelerate an addition reaction when said crosslinking is by an addition system, said catalyst being a catalyst which catalyzes condensation of said crosslinking agent and said polydimethylsiloxane when said crosslinking is by a condensation system.

4,614,759

SURFACE SIZING AGENTS FOR PAPER

Günter Sackmann, Leverkusen; Ulrich Beck, Bornheim, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 5, 1985, Ser. No. 762,601

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3429961

Int. Cl.[4] C08L *35/02*

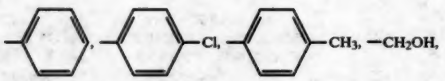
U.S. Cl. 524—549 7 Claims

1. Surface sizing agents for paper containing aqueous or aqueous-alcoholic alkali metal, amine or ammonium salt solutions of copolymers of maleic anhydride and diisobutylene and, if appropriate, a vinyl monomer of the formula

I

in which

R designates H, $-CH_3$, $-C_2H_5$, $-OR_2$, $-OCOCH_3$,



or $-CH_2-O-COCH_3$,

R_1 designates H or $-CH_3$ and

R_2 designates alkyl,

the anhydride groups of the copolymers being bis-esterified to the extent of 25–90 mol % with primary aliphatic monoalcohols with 1 to 12 C atoms.

4,614,760

LOW CONSISTENCY, ONE-PART SILICONE ELASTOMERS

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

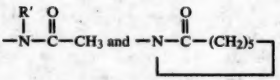
Filed Sep. 27, 1985, Ser. No. 780,747

Int. Cl.[4] C08L *83/04*

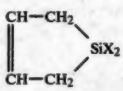
U.S. Cl. 524—860 11 Claims

1. A composition, stable in the absence of moisture, comprising a product obtained by mixing

(A) 100 parts by weight of a hydroxyl endblocked polydiorganosiloxane where the organic radicals are monovalent radicals selected from the group consisting of methyl, vinyl, phenyl, and 3,3,3-trifluoropropyl radicals, the organic radicals being at least 50 mol percent methyl radicals, the viscosity of the polydiorganosiloxane being from 0.05 Pa·s to 100 Pa·s at 25° C. (B) a silane selected from the group consisting of a silane of the formula CH_3RSiX_2 in which R is selected from the group consisting of methyl and vinyl radicals, X is a monovalent amido radical selected from the group consisting of



where R′ is a monovalent radical selected from the group consisting of an alkyl radical of from 1 to 4 carbon atoms per radical and phenyl radical and a silane of the formula



in which X is as defined above, the silane being present in an amount sufficient to provide at least one mole of silane per mole of available hydroxyl radical in the composition,

(C) from 0 to 150 parts by weight of nonacidic filler, and

(D) from 0.1 to 8 parts by weight of an organic peroxide suitable for vulcanizing silicone rubber.

4,614,761

PROCESS FOR PRODUCING CURABLE RESIN

Eiichiro Takiyama, Kamakura, and Katsuhisa Morita, Takasaki, both of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 712,772

Claims priority, application Japan, Mar. 19, 1984, 59-51237

Int. Cl.[4] C08F *8/30*

U.S. Cl. 525—59 7 Claims

1. A process for producing a curable resin having unsaturated groups in the side chains through urethane linkages, which comprises reacting (A) a polymer having hydroxyl groups in the side chains selected from the group consisting of a copolymer of a hydroxyl (meth)acrylate with another vinyl monomer and a saponification product of a copolymer of vinyl acetate and another vinyl monomer with (B) an unsaturated monoisocyanate obtained by reacting 1 mole of a diisocyanate with 1.1 to 1.6 moles of an unsaturated monoalcohol.

4,614,762

WATER SOLUBLE LINEAR POLYETHYLENEIMINE DERIVATIVE FROM WATER-INSOLUBLE POLYETHYLENEIMINE, POLYVINYL ALCOHOL AND ALDEHYDE

Nelson S. Marans, Silver Spring, and Stephen M. Pulford, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jun. 15, 1984, Ser. No. 620,977
Int. Cl.[4] C08F 8/00
U.S. Cl. 525—61 5 Claims

1. A water soluble polymer product formed by reacting the reactants consisting essentially of a linear, substantial water insoluble polyethyleneimine having at least about 90 percent of the amino groups therein in the form of free secondary amino groups, a polyvinyl alcohol and a C_1–C_2 aldehyde to form a single polymer product of said three reactants, said molar ratio of linear polyethyleneimine to polyvinyl alcohol to aldehyde being reacted is from about 1:0.1:0.1 to 1:10:10.

4,614,763

MOULDING COMPOUNDS OF THERMOPLASTIC POLYAMIDE AND GRAFT RUBBER

Ludwig Trabert; Rudolf Binsack, both of Krefeld; Christian Lindner, Cologne; Josef Merten, Korschenbroich; Heinrich Haupt, Krefeld; Leo Morbitzer, Cologne; Gunter B. Weber, and Claus Wulff, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,768
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1984, 3405532
Int. Cl.[4] C08L 51/00
U.S. Cl. 525—66 18 Claims

1. A post-treatment process for the preparation of thermoplastic molding compositions having a degree of coupling of at least 3% comprising, heating a granulated blend comprising from 65% to 97%, based on the weight of the blend, of a thermoplastic polyamide and from 3% to 35%, based on the weight of the blend, of a graft rubber selected from a diene graft rubber and an acrylate graft rubber, where the graft rubber has a gel content of at least 50%, based on the weight of the graft rubber, to a temperature of from 5° C. to 80° C. below the melting point of the thermoplastic polyamide for at least one-half hour in vacuo or under a nitrogen atmosphere.

4,614,764

LINEAR LOW DENSITY ETHYLENE POLYMERS BLENDED WITH MODIFIED LINEAR LOW DENSITY ETHYLENE POLYMERS

Edward A. Colombo; Tae H. Kwack, both of Fairport, and Tien-Kuei Su, Pittsford, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 6, 1985, Ser. No. 708,911
Int. Cl.[4] C08L 23/08, 23/26
U.S. Cl. 525—72 25 Claims

1. A blown plastic resin film of improved properties made from a blend of a linear, low density ethylene polymer and 5 to 30 weight percent of the blend of a linear, low density ethylene polymer which has been modified by reaction in the molten state with a free radical generator.

4,614,765

MOLDING COMPOSITION CONTAINING FUNCTIONALIZED THERMOPLASTIC RUBBER AND METHOD

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 29, 1985, Ser. No. 717,759
Int. Cl.[4] C08L 53/00
U.S. Cl. 525—93 24 Claims

1. A thermoplastic molding composition which comprises a blend of:

(A) a copolymer having recurring units of a monoalkenyl aromatic monomer and recurring units of an α,β-ethylenically unsaturated dicarboxylic anhydride N-substituted imide, and

(B) a hydrogenated elastomeric block copolymer having at least one substantially completely hydrogenated diene polymer mid block and at least two monoalkenyl arene polymer end blocks in which at least a portion of the arene groups contained in the end blocks are substituted with at least one substituent selected from the group consisting of nitro, cyano and the trifluoromethanesulfonyl.

4,614,766

COMPOSITIONS CONTAINING RESINS HAVING AIR-OXIDIZABLE GROUPS AND EPOXY GROUPS AND EPOXY-REACTIVE SILICON-CONTAINING COMPOUNDS HAVING HYDROLYZABLE GROUPS

Karl F. Schimmel, Verona; Paul J. Prucnal, Pittsburgh; Douglas R. Camp, Gibsonia, all of Pa., and John W. Tiedt, Whitefish Bay, Wis., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 27, 1985, Ser. No. 780,766
Int. Cl.[4] C08F 8/00
U.S. Cl. 525—104 25 Claims

1. A curable composition comprising:

(1) a resin containing at least one air-oxidizable group and at least one epoxy group, and

(2) a compound having in a molecule thereof at least one epoxy-reactive moiety and at least one silicon atom directly bonded to a group Y wherein Y represents a hydrolyzable group.

4,614,767

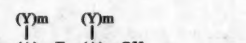
MOLDABLE POLYESTER-SULFONE THERMOPLASTIC RESIN

Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 29, 1985, Ser. No. 760,019
Int. Cl.[4] C08F 8/00
U.S. Cl. 525—150 23 Claims

1. A moldable thermoplastic resin comprising the reaction product of a dihydric phenol with a bis(α,α-disubstituted acetic acid)sulfone or its reactive derivative,

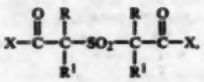
said dihyrdic phenol having the formula:



in which each A separately represents a phenylene group, a napthalene group or a biphenylene group; E represents an alkylene group; an alkylidene group; hexafluoroisopropylidene; two or more alkylene groups connected by a group other than an alkylene or an alkylidene group; two or more alkylidene groups connected by a group other than an alkylene or an alkylidene group; a cycloaliphatic group; two or more cycloaliphatic groups connected by a group other than an alkylene, an alkylidene or a cycloaliphatic group; or a cycloalkylidene group; each Y separately represents fluorine, chlorine, bromine, hydrogen, a monovalent hydrocarbon group or an oxy group; and wherein if A is a phenylene group m equals 4, if A is a

naphthalene group m equals 6 and if A is a biphenyline group m equals 8; and

said bis(α,α-disubstituted acetic acid)sulfone or its reactive derivative having the formula:



in which each R and R^1 separately represent methyl, ethyl or propyl with the proviso that R and R^1 on the same carbon atom cannot both be propyl and in which both X's represent hydroxy, methoxy or chlorine.

4,614,768

PROCESS FOR PREPARATION OF COPOLYMERS OF ISOPROPENYL AROMATIC MONOMER AND VINYL AROMATIC MONOMER

Grace Y. Lo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

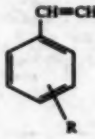
Continuation-in-part of Ser. No. 630,906, Jul. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 525,336, Aug. 22, 1983, abandoned. This application May 17, 1985, Ser. No. 734,988

Int. Cl.[4] C08F 2/06

U.S. Cl. 525—250 **15 Claims**

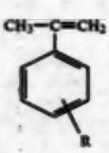
1. A process for the preparation of a polymer blend the steps of the process comprising

(a) dissolving at least one monomeric member selected from the group consisting of vinyl aromatic monomers of the formula (I)



(I)

wherein R is hydrogen or a lower alkyl group containing up to four carbon atoms, and mixtures thereof with butadiene, or isoprene in an isoproprenyl aromatic monomer of the formula



wherein R is hydrogen or a lower alkyl group containing up to four carbon atoms to form at least a partially polymerizable solution, adding an organolithium polymerization initiator and initiating polymerization to thereby polymerize at least a major portion of the monomeric member and at least some of the isopropenyl aromatic monomer to provide a first polymer solution and terminating polymerization;

(b) dissolving an additional quantity of at least one monomeric member selected from the group consisting of vinyl aromatic monomers of formula (I) and mixtures thereof with butadiene or isoprene in the first polymer solution, adding an organolithium polymerization initiator and initiating polymerization to provide a second polymer solution and terminating polymerization;

(c) optionally repeating step (b) one or more times; and

(d) recovering the polymer blend.

4,614,769

$NADH_2$ MIMICS AS CHIRAL PSEUDOHYDROGENASES

Joseph J. Zupancic, Bensenville, and Raymond J. Swedo, Mount Prospect, both of Ill., assignors to Allied Corporation, Morristown, N.J.

Filed Feb. 8, 1985, Ser. No. 699,450

Int. Cl.[4] C08F 26/06

U.S. Cl. 525—327.1 **12 Claims**

1. A method of asymmetric reduction of the carbonyl group of aldehydes, ketones and ketoesters, the thiocarbonyl group of thioaldehydes, thioketones and thioketoesters, and the imino group of imines and iminoesters comprising reacting in the presence of a divalent cation of magnesium or zinc or the monovalent cation of lithium a solution in a nonaqueous but water-miscible organic solvent of an organic substrate containing a reducible carbonyl, thiocarbonyl, or imino group with the reduced form of a polymer to whose backbone is attached an aromatic heterocyclic ring system having a pyridine nucleus and bearing mono- or disubstituted carboxamido groups at the 3- or 3,5-positions relative to the pyridine ring nitrogen, said attachment being a covalent bond between a carbon atom of the polymer backbone and the pyridine ring nitrogen, where the aromatic heterocyclic ring system is a pyridine, quinoline, or an isoquinoline ring system, and said carboxamido group has the formula —$CONR_4R_5$, where R_4, R_5 is selected from the group consisting of hydrogen and alkyl, aralkyl, substituted alkyl or substituted aralkyl groups subject to the constraint that not more than one of such groups is hydrogen and at least one of the alkyl, aralkyl or substituted alkyl or aralkyl groups has a chiral center adjacent to the nitrogen of the amide, said metal being present in an amount effective to complex with a substantial portion of the reduced polymer, and separating the reduction product produced thereby and the polymer.

4,614,770

NADHCN MIMICS AS CHIRAL PSEUDOCYANOTRANSFERASES

Joseph J. Zupancic, Bensenville, and Raymond J. Swedo, Mount Prospect, both of Ill., assignors to Allied Corporation, Morristown, N.J.

Filed May 20, 1985, Ser. No. 736,049

Int. Cl.[4] C08F 26/06

U.S. Cl. 525—327.1 **8 Claims**

1. A method of asymmetric hydrocyanation of the carbonyl group of aldehydes and ketones, the thiocarbonyl group of thioaldehydes and thioketones, and the imino group of imines comprising reacting a solution in a nonaqueous but water-miscible organic solvent of an organic substrate containing a reducible carbonyl, thiocarbonyl, or imino group with the reduced form of a polymer to whose backbone is attached an aromatic heterocyclic ring system having a pyridine nucleus and bearing mono- or disubstituted carboxamido groups at the 3- or 3,5-positions relative to the pyridine ring nitrogen, said attachment being a covalent bond between a carbon atom of the polymer backbone and the pyridine ring nitrogen, where the aromatic heterocyclic ring system is a pyridine, quinoline, or an isoquinoline ring system, and said carboxamido group has the formula —$CONR_4R_5$, where R_4, R_5 is selected from the group consisting of hydrogen and alkyl, aralkyl, substituted alkyl or substituted aralkyl groups subject to the constraint that not more than one of such groups is hydrogen and at least one of the alkyl, aralkyl or substituted alkyl or aralkyl groups has a chiral center adjacent to the nitrogen of the amide and separating the reduction product produced thereby and the polymer.

4,614,771

PROCESS FOR MAKING DIENE COPOLYMER RUBBERS

Hiroyuki Watanabe, Yokohama; Kohkichi Noguchi, Kamakura; Toshio Kase, Tokyo, and Shuichi Akita, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1985, Ser. No. 790,167
Claims priority, application Japan, Oct. 26, 1984, 59-225493
Int. Cl.[4] C08F 8/00
U.S. Cl. 525—351 7 Claims

1. A process for making a diene copolymer rubber having improved rebound, which comprises polymerizing a conjugated diene monomer and an aromatic vinyl monomer in a hydrocarbon solvent in the presence of an alkali metal and/or alkaline earth metal initiator, to form a dienyl-metal terminated, conjugated diene-aromatic vinyl copolymer rubber, and thereafter reacting the copolymer rubber with at least one reactant selected from the group consisting of aminoaldehydes, aminoketones, aminothioaldehydes and aminothioketones.

4,614,772

LOW MOLECULAR WEIGHT POLYMER PROCESS

Douglas C. Edwards, and Dilipkumar Padliya, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Continuation-in-part of Ser. No. 665,946, Oct. 29, 1984, abandoned. This application Sep. 26, 1985, Ser. No. 780,334
Int. Cl.[4] C08F 8/50
U.S. Cl. 525—388 10 Claims

1. A process for the production of a low molecular weight isobutylene polymer which comprises feeding to an extruder an isobutylene-conjugated diolefin copolymer containing essentially no antioxidant-type component having a molecular weight M_w of from about 350×10^3 to about 700×10^3 and having no added free radical sources and reacting said polymer with gas within said extruder to produce said low molecular weight polymer having a molecular weight M_w of from about 25×10^3 to about 150×10^3, characterized in that:

(a) said extruder consists essentially of a twin screw extruder mixer device capable of providing a high degree of interfacial contact between the viscous polymeric material and a gaseous phase and having a feed section, a reaction section and a volatiles removal section and being equipped with a gas feed port attached to and communicating with the interior of the extruder barrel at a point closely adjacent to the junction of the feed section and the reaction section, and being equipped with a gas vent port attached to and communicating with the interior of the extruder barrel at a point closely adjacent to the junction of the reaction section and the volatiles removal section and a second vent port also connected to a vacuum means attached to and communicating with the interior of said extruder barrel at a point with the volatiles removal section, the screws within the reaction section being equipped with shearing flights and within the feed section and the volatiles removal section being equipped with mixing and conveying flights,

(b) said polymer is conveyed through said extruder by said screws and is reacted in at least said reaction section with gas supplied from said gas feed port, gas is removed through said gas vent port and any volatile materials are removed through said second vent port,

(c) said extruder is maintained at a temperature of from about 150° to about 250° C.,

(d) the residence time for said polymer in said extruder from said gas feed port to said gas vent port is from about 0.5 to about 3 minutes, and

(e) the gas supplied to said gas feed port is an oxygen-containing gas selected from air or a mixture of gases containing not less than about 5 and not more than about 30 per cent by volume of oxygen and one or more chemically inert gases at a pressure of from about 1.1 to about 3.5 kg/cm^2 at a rate in liters/hour of from about 10 to about 500 times the polymer throughput rate in kg/hour.

4,614,773

NOVEL POLYPHENYLENE ETHER RESIN COMPOSITION

Akitoshi Sugio, Ohmiya; Masao Okabe, Abiko, and Akikazu Amagai, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 9, 1985, Ser. No. 689,895
Claims priority, application Japan, Jan. 10, 1984, 59-2274; Feb. 29, 1984, 59-37994; Jun. 4, 1984, 59-114264
Int. Cl.[4] C08F 283/08
U.S. Cl. 525—391 8 Claims

1. A polyphenylene ether resin composition comprising

(A) a polyphenylene ether resin,

(B) an aromatic polyester resin,

(C) a phenoxy resin produced by polycondensing a bisphenol with an epihalohydrin, and

(D) an unsaturated carboxylic acid.

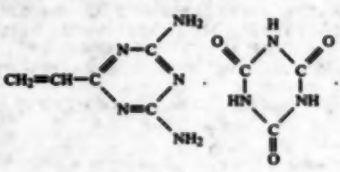
4,614,774

ISOCYANURIC ACID ADDUCT OF 2-VINYL-4,6-DIAMINO-S-TRIAZINE, PROCESS FOR SYNTHESIS OF SAID ADDUCT AND PROCESS FOR HARDENING POLYEPOXY RESIN WITH SAID ADDUCT

Natuso Sawa, Nakatado; Takeshi Masuda, Marugame, and Takashi Mizui, Kawagoe, all of Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan

Division of Ser. No. 694,958, Jan. 25, 1985, Pat. No. 4,567,259. This application Jul. 25, 1985, Ser. No. 758,778
Claims priority, application Japan, Jan. 26, 1984, 59-13121
Int. Cl.[4] C08G 59/56
U.S. Cl. 525—504 7 Claims

4. A heat curable one-pack epoxy resin composition comprising a polyepoxy compound and a curing agent for said polyepoxy compound comprising an isocyanuric acid adduct of 2-vinyl-4,6-diamino-S-triazine of the following structural formula:



4,614,775

PREPARATION OF BINDERS FOR COATINGS, THERMOSETTING COATING COMPOSITIONS AND THEIR USE

Jurrianus Bekooij; Petrus G. Kooijmans; Werner T. Randenbusch, and Stephen A. Stachowiak, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1985, Ser. No. 694,738
Claims priority, application United Kingdom, Feb. 28, 1984, 8405139
Int. Cl.[4] C08L 63/00
U.S. Cl. 525—533 11 Claims

1. A process for the preparation of an essentially epoxy-free, carboxy group-containing, water-thinnable curable binder for coatings which comprises reacting together at a temperature from about 60° to about 170° C. and in the presence of an esterification catalyst which promotes the selective reaction of epoxy groups with carboxyl groups (a) a polyglycidyl ether having, on average, n epoxy groups per molecule, where $1\leq n<2$, which comprises the reaction product of a multifunctional polyglycidyl ether having, on average, x epoxy groups per molecule, where $x>2$, with $(x-n)$ mol of a monofunctional phenol per mol of the multifunctional polyglycidyl ether and (b) a dicarboxylic acid in an amount and under conditions effective for reacting essentially all the n epoxy groups per

molecule with the dicarboxylic acid and producing a reaction product of (a) and (b) having an acid value in the range of about 20 to about 80 mg KOH/g.

4,614,776

POLYMERIZATION INITIATOR

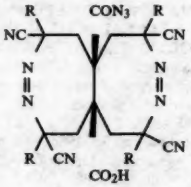
Barry D. Dean, Broomall, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 759,771, Jul. 29, 1985, which is a division of Ser. No. 668,059, Nov. 5, 1984, Pat. No. 4,556,512. This application Feb. 5, 1986, Ser. No. 826,395

Int. Cl.[4] C08F *4/04*

U.S. Cl. 526—204 **1 Claim**

1. A method for starting the polymerization of at least one free radical polymerizable monomer which comprises incorporating into said monomer an effective amount of an initiator having the formula



wherein each R separately represents a methyl or ethyl moiety, to initiate polymerization of the said at least one monomer.

4,614,777

ADDITION INTERPOLYMERS FROM ISOBORNYL (METH)ACRYLATE WHICH CONTAIN ALKOXYSILANE AND/OR ACYLOXYSILANE GROUPS

Charles M. Kania, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 5, 1985, Ser. No. 762,490

Int. Cl.[4] C08F *30/08*

U.S. Cl. 526—279 **26 Claims**

1. An addition interpolymer containing at least one silicon atom directly bonded to a hydrolyzable group, said addition interpolymer derived from a mixture of copolymerizable ethylenically unsaturated monomers comprising an isobornyl group-containing monomer selected from the group consisting of isobornyl methacrylate, isobornyl acrylate and a mixture thereof; wherein the amount of said isobornyl group-containing monomer ranges from 10 percent to 60 percent by weight based on the total weight of said mixture of copolymerizable ethylenically unsaturated monomers.

4,614,778

RANDOM COPOLYMER

Hirokazu Kajiura, 2-7, Misono 1-chome, Ohtake-shi, Hiroshima-ken; Hidekuni Oda, 64-16, Muronoki-cho, 4-chome, Iwakuni-shi, Yamaguchi-ken, and Syuji Minami, 2,5, Misono 1-chome, Ohtake-shi, Hiroshima-ken, all of Japan

Filed Jan. 29, 1985, Ser. No. 696,161

Claims priority, application Japan, Feb. 3, 1984, 59-16995; Nov. 12, 1984, 59-236828

Int. Cl.[4] C08F *232/06*

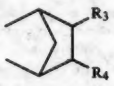
U.S. Cl. 526—281 **24 Claims**

1. A novel random copolymer, characterized in that

(A) it comprises ethylene and a 1,4,5,8-dimethano-1,2,3,4,4a,5,8,8a-octahydronaphthalene represented by the following formula (1)

(1)

wherein R_1 and R_2 are identical and different and each represents a hydrogen atom, a halogen atom or an alkyl group, or R_1 and R_2 may be bonded to each other to form a trimethylene group or a group represented by the following formula



in which R_3 and R_4 are identical of different and each represents a hydrogen atom, a halogen atom or an alkyl group,

(B) the mole ratio of polymerized units derived from 1,4,5,8-dimethano-1,2,3,4,4a,5,8,8a-octahydronaphthalene to polymerized units derived from ethylene is from 3:97 to 95:5, and

(C) the 1,4,5,8-dimethano-1,2,3,4,4a,5,8,8a-octahydronaphthalene is incorporated in the polymer chain as polymerized units represented by the following formula (2)

(2)

wherein R_1 and R_2 are as defined above.

4,614,779

OIL- AND HEAT-RESISTANT RUBBER COMPOSITION COMPRISING NITRILE CONTAINING RUBBER AND FLUORINE CONTAINING RUBBER

Noboru Watanabe, Yokohama; Hideyoshi Shomoda, Kamakura, and Yoichiro Kubo, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed May 13, 1985, Ser. No. 733,493

Claims priority, application Japan, May 11, 1984, 59-93007

Int. Cl.[4] C08L *9/02, 27/12, 27/16*

U.S. Cl. 525—199 **6 Claims**

1. An oil- and heat-resistant rubber composition comprising a nitrile group-containing diene hydrocarbon rubber or an acrylate rubber, having a nitrile content of about 5 to 60% by weight and having an iodine number of not more than 120 and a fluorine-containing rubber.

4,614,780

HIGH MOLECULAR WEIGHT WATER-SWELLABLE SUBSTANCES

Helmut Huhn, Walsrode, and Werner Karstens, Bomlitz, both of Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,298

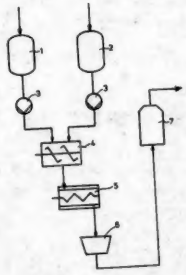
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343852; Mar. 14, 1984, 3409269

Int. Cl.[4] C08F *20/44*

U.S. Cl. 525—329.1 **8 Claims**

1. A water-swellable substance of high molecular weight produced by reacting water-soluble hydrolyzed products of polyacrylonitrile polymers containing at least 30% by weight of acrylic acid units, up to 100% of which may be present as ammonium salts, alkali and/or alkaline-earth metal salts, in the form of a 5 to 65% by weight aqueous solution with from 0.3

to 10% by weight, based on the polymers, of a crosslinking agent, said agent being a reaction product of aziridine and/or methyl aziridine with an at least difunctional esterification



product of an at least dihydric alcohol with acrylic and/or methacrylic acid, the reaction of the polymers with the crosslinking agent being carried out at temperatures of from 0° to 100° C. and at a pH-value in the range from 3 to 8.

4,614,781

RESIN FROM SAPONIFIED ETHYLENE-VINYL ACETATE COPOLYMERS, PRODUCTION AND USE THEREOF

Teruo Hori, Toyonaka; Masamitsu Nakabayashi, Sennan, and Yuzo Furukawa, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 6, 1984, Ser. No. 668,822

Claims priority, application Japan, Nov. 7, 1983, 58-209611; Dec. 26, 1983, 58-248643; Feb. 16, 1984, 59-28107; Oct. 16, 1984, 59-217784

Int. Cl.⁴ C08F *8/12*

U.S. Cl. 525—330.6 **26 Claims**

1. A carboxyl-modified resin of a saponified ethylene-vinyl acetate copolymer, a 1.0 mm-thick sheet therefrom having a total transmittance of more than 90%, a haze of less than 3% and a yellowness index of less than 3.

4,614,782

HEAT RESISTANT RESIN COMPOSITION

Hiroshi Nishizawa, Kitaibaraki; Shozo Kasai, Hitachi; Yasunori Okada, Hitachi; Yuichi Osada, Hitachi, and Yoshiyuki Mukoyama, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 364,471, Apr. 1, 1982, abandoned. This application Nov. 23, 1984, Ser. No. 674,309

Claims priority, application Japan, Apr. 8, 1981, 56-53643; Apr. 14, 1981, 56-56537

Int. Cl.⁴ C08F *283/04*; C08L *71/00*

U.S. Cl. 525—424 **24 Claims**

1. A heat resistant resin coating composition comprising:

(A) a polyamideimide resin obtained by reacting the following components in a phenolic solvent:

(a) A polyisocyanate containing an isocyanurate ring in an amount of 0 to 30 equivalent percents based on the total isocyanate equivalent;

(b) a diisocyanate free of an isocyanurate ring;

(c) a lactam;

(d) a tricarboxylic acid anhydride, and

(e) a compound different from the component (d) and having the formula:

$$X-\underset{\displaystyle X'}{\underset{|}{R}}-(Y)_{n-1} \qquad (1)$$

wherein X and X' are independently a carboxyl group or an acid anydride group; Y is a carboxyl group, a hydroxyl group, and acid anhydride group or an amino group; n is an integer of 1 or more; r is a residue of aromatic aliphatic, alicyclic or heterocyclic group, or a group of the formula:

$$-(R_1)_m-Z(R_2)_l \qquad (2)$$

in which R_1 and R_2 are independently a residue of aromatic, aliphatic, alicyclic or heterocyclic group; Z is $-CH_2-$, $-CO-$, $-SO_2-$ or $-O-$; and m and l are independently an integer of 1 or 2, in an amount of 0 to 30 equivalent percents based on the total carboxyl equivalent; said polyamideimide resin (A) being a branched polyamideimide obtained from components (b), (c) and (d) and at least one of components (a) and (e), and

(B) at least one member selected from the group consisting of a polyester resin, a polyesteramide resin, a polyesterimide resin and a polyesteramideimide resin; the component (B) and the (A) being reacted with each other at a temperature of 120° to 220° C. in the presence of an ester interchange catalyst and said phenolic solvent; the amount of the component (A) being 1 to 400 parts by weight based on 100 parts by weight on the component (B).

4,614,783

SELF-CROSSLINKING CATHODICALLY DEPOSITABLE ED-BINDERS CONTAINING MODIFIED PHENOL NOVOLAKS

Wolfgang Daimer; Johann Gmoser, and Rudolf Schipfer, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Mar. 20, 1984, Ser. No. 591,590

Claims priority, application Austria, Mar. 21, 1983, 975/83

Int. Cl.⁴ C08G *8/36*

U.S. Cl. 525—504 **17 Claims**

1. Process for producing cathodically depositable self-crosslinking binders for electrodeposition based on modified phenol novolaks, characterized in that an alkylphenol novolak having a molecular weight of at least 500 and a hydroxyl value of between 100 and 700 mg KOH/g, which has undergone total or partial etherification of the phenolic hydroxy groups and is substantially free of oxirane groups, obtained through a reaction catalyzed with an acid (component A), is reacted simultaneously or separately with (B) amines which carry a tertiary amino group and at least one hydroxy group or primary or secondary amino group (component B) and (C) aromatic or aliphatic or cycloaliphatic polyisocyanates (component C), the weight ratio of components being chosen in order that for each mole of component (B) 2 to 4 NCO-equivalents of component (C) are present and that the resultant isocyanate-group-free reaction product has an amine value of between 40 and 120 mg KOH/g.

4,614,784

HOMOGENEOUS MOLECULAR COMPOSITES, PROCESS FOR THEIR PRODUCTION AND ARTICLES MADE THEREFROM

Joseph J. Kozakiewicz, Wallingford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 6, 1984, Ser. No. 597,562

Int. Cl.⁴ C08G *1/00*

U.S. Cl. 527—313 **34 Claims**

1. A polymeric liquid crystalline or isotropic alloy comprising a mixture of

(i) an in situ polymerized flexible coil-like polymer, and
(ii) a reinforcing amount of a rigid rod-like liquid crystalline polymer.

4,614,785

PROCESS FOR THE PRODUCTION OF OLIGOMERIC POLYISOCYANATES AND THEIR USE IN THE PRODUCTION OF POLYURETHANE PLASTICS

Roland Richter, Cologne; Hanns P. Müller, Odenthal; Werner Kubitza, Leverkusen; Theodor Engbert, Dormagen, and Gerhard Mennicken, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,472
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1984, 3432081
Int. Cl.[4] C08G 18/80
U.S. Cl. 528—45 20 Claims

1. A process for the production of an oligomeric polyisocyanate which comprises dimerizing and/or trimerizing a portion of the isocyanate groups of an organic polyisocyanate in the presence of a tertiary phosphine or a peralkylated phosphorus acid triamide as catalyst and terminating the dimerization and/or trimerization reaction at the desired degree of oligomerization by adding a sulfonyl isocyanate as the catalyst poison.

4,614,786

STABLE ISOCYANATE/EPOXIDE PREPOLYMERS AND THERMOSET POLYURETHANES PRODUCED THEREFROM

Anil B. Goel, Worthington; Peggy A. Blackburn, Plain City, and Timothy A. Tufts, Columbus, all of Ohio, assignors to Ashland Oil Inc., Ashland, Ky.

Filed Aug. 12, 1985, Ser. No. 764,284
Int. Cl.[4] C08G 18/58
U.S. Cl. 528—60 8 Claims

1. The process for preparing a polyurethane comprising reacting

A. A prepolymer prepared by the low temperature reaction of a polyisocyanate and a polyepoxide containing no or very low levels of hydroxyl groups in the absence of any catalyst with

B. A polyol.

4,614,787

DRUG DISPENSING WOUND DRESSING

Michael Szycher, Lynnfield; Donald J. Dempsey, Newbury, and Jonathan L. Rolfe, North Easton, all of Mass., assignors to Thermedics, Inc., Woburn, Mass.

Filed Nov. 13, 1984, Ser. No. 670,810
Int. Cl.[4] C08G 18/10; A61F 13/00
U.S. Cl. 528—75 35 Claims

1. A wound dressing comprising a drug-dispensing elastomeric film, said film comprising:

A. A cured reaction product consisting essentially of:
(1) isophorone diisocyanate;
(2) a macroglycol; and
(3) a monomer containing hydroxyl and vinyl groups; and

B. a pharmacoactive agent dispersed through said cured reaction product.

4,614,788

THERMOSETTABLE EPOXY RESIN COMPOSITION

Marvin L. Dettloff, Lake Jackson; Dennis L. Steele, Freeport, and Ross C. Whiteside, Jr., Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

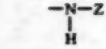
Filed Aug. 28, 1985, Ser. No. 770,138
Int. Cl.[4] C08G 59/56, 59/72
U.S. Cl. 528—91 8 Claims

1. A thermosettable epoxy resin composition which comprises

(A) an epoxy resin having an average of more than one vicinal 1,2-epoxy groups per molecule or a mixture thereof;

(B) at least one boron trifluoride complex of a primary, secondary or tertiary amine or combination thereof; and

(C) at least one acyclic or cyclic phosphazene compound having at least one pendant



group wherein Z is a hydrocarbyl or a halogen substituted hydrocarbyl group having from about 1 to about 20 or a —Q—O—Q')$_n$ or a —Q—S—Q')$_n$ group wherein each Q and Q' is independently a divalent hydrocarbyl or halogen substituted hydrocarbyl group wherein the total number of carbon atoms in the Q and Q' groups is from 2 to about 20 and n has a value from 1 to about 10;

wherein component (B) is employed in an amount of from about 2 to about 10 parts per one hundred parts by weight of component (A); component (C) is employed in an amount which provides an improvement in the glass transition temperature of the composition when cured but a quantity less than that quantity which results in decomposition of the resin mixture during cure and wherein a mixture consisting only of components (A), (B) and (C) forms a homogeneous composition at a temperature below which gelation of the mixture occurs.

4,614,789

THERMOTROPIC AROMATIC POLYESTERS WITH HIGH RIGIDITY, A PROCESS FOR THE PRODUCTION THEREOF AND THE USE THEREOF FOR THE PRODUCTION OF MOULDINGS, FILAMENTS, FIBRES AND FILMS

Hans-Rudolf Dicke, and Hermann Kauth, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 17, 1985, Ser. No. 755,847
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1984, 3427886
Int. Cl.[4] C08G 63/60
U.S. Cl. 528—128 4 Claims

1. A thermotropic aromatic polyester containing condensed radicals of

(a) p-hydroxybenzoic acid or substituted p-hydroxybenzoic acid substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, aryl having 6 to 10 carbon atoms, alkylaryl having 7 to 12 carbon atoms, or halogen,

(b) hydroquinone, 4,4'-dihydroxydiphenyl or a mixture thereof,

(c) isophthalic acid and optionally terephthalic acid, and

(d) 3,4'-benzophenone dicarboxylic, 4,4'-benzophenone dicarboxylic acid or a mixture thereof,

wherein the polyester contains the condensed radicals

(a) in a quantity of from 40 to 80 mol%,

(c) in a quantity of from 15 to 58 mol%, and

(d) in a quantity of from 2 to 40 mol %,

based, in each case, on the sum of the condensed radicals (a), (c) and (d), the molar ratio of the condensed radicals (b)/(c+d)

being from 0.95 to 1.05 and the proportion of terephthalic acid radicals to the radicals (c) being at most 30 mol %.

4,614,790

MELT PROCESSABLE OPTICALLY ANISOTROPIC POLYESTERS

David A. Hutchings, Newark; Gloria M. Sieloff, Pataskala; David M. Lee, and G. Fred Willard, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

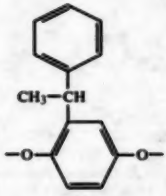
Filed Nov. 5, 1984, Ser. No. 668,044
Int. Cl.[4] C08G 63/18, 63/68
U.S. Cl. 528—191 4 Claims

1. A melt spinnable liquid crystal polyester which is optically anisotropic in the melt phase and of fiber forming molecular weight and capable of being heat treated in fiber form to increase tenactiy said polyester consisting essentially of recurring moieties of formulas:

I.

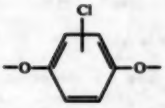
and

II.



and

III.



wherein the mole percentage of I is 50%, and the mole percentage of II is about 33% to about 42% and mole percentage of III is about 8% to about 17%, and wherein said polyester is prepared by adding an organic solvent solution of terephthaloyl chloride to an organic solvent solution of a mixture of (1-phenylethyl)hydroquinone and chlorohydroquinone and reacting said materials.

4,614,791

MELT PROCESSABLE OPTICALLY ANISOTROPIC POLYESTERS

David A. Hutchings, Newark; Gloria M. Sieloff, Pataskala; David M. Lee, and G. Fred Willard, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

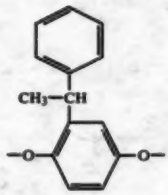
Filed Nov. 5, 1984, Ser. No. 668,528
Int. Cl.[4] C08G 63/18
U.S. Cl. 528—193 5 Claims

1. A melt spinnable liquid crystal polyester which is optically anisotropic in the melt phase and of fiber forming molecular weight and capable of being heat treated in fiber form to increase tenacity said polyester consisting essentially of recurring moieties of formulas:

-continued

and

II



and

III

wherein the mole percentage of II (based on the total moieties of I, II, III) is between about 41–42%, and the mole percentage of III is between 8–9% and wherein said polyester is made by solution polymerization in which an organic solvent solution of terephthaloyl chloride is added to an organic solvent solution of a mixture of (1-phenylethyl)hydroquinone and hydroquinone.

4,614,792

ANIONIC POLYMERIZATION OF LACTAM WITH ALKALINE EARTH METAL COMPOUND CATALYST, LACTAM COMPOUND ACTIVATOR AND ESTER COMPOUND

Jozef J. M. Bongers, Elsloo, and Albert A. van Geenen, Brunssum, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 7, 1985, Ser. No. 742,412
Claims priority, application Netherlands, Jun. 9, 1984, 8401843
Int. Cl.[4] C08G 69/20
U.S. Cl. 528—318 14 Claims

1. An anionically catalyzed polymerication process for manufacturing polyamides comprising:

conducting the anionically catalyzed polymerication of at least one lactam in the presence of:

an alkaline earth metal catalyst compound,

an activator selected from the group consisting of lactam-ended isocyanates, lactam-ended polyurethanes, acyllactam compounds and mixtures thereof, and

a low molecular weight ester compound having a pKa greater than 13.

4,614,793

HEPATITIS A—SUBUNIT ANTIGEN

Joseph V. Hughes, Harleysville; Edward M. Scolnick, Wynnewood, and Joanne E. Tomassini, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 541,836, Oct. 14, 1983. This application Mar. 2, 1984, Ser. No. 585,942
Int. Cl.[4] C07K 15/04
U.S. Cl. 530—350 6 Claims

1. A hepatitis A surface antigen protein which has the sequence

1	Val	Gly	Asp	Asp	Ser	Gly	Gly	Phe	Ser	Thr	Thr
	I										
1918											1945
	Val	Ser	Thr	Glu	Gln	Asn	Val	Pro	Asp		Pro

-continued

								1972	
Gln	Val	Gly	Ile	Thr	Thr	MET II	Lys	Asp	Leu
							1999		
Lys	Gly	Lys	Ala	Asn	Arg	Gly	Lys	MET III	Asp
						2026			
Val	Ser	Gly	Val	Gln	Ala	Pro	Val	Gly	Ala
					2053				
Ile	Thr	Thr	Ile	Glu	Asp	Pro	Ala	Leu	Ala
				2080					
Lys	Lys	Val	Pro	Glu	Thr	Phe	Pro	Glu	Leu
			2107						
Lys	Pro	Gly	Glu	Ser	Arg	His	Thr	Ser	Asp
		2134							
His	MET	Ser	Ile	Tyr	Lys	Phe	MET IV	Gly	Arp
	2161								
Ser	His	Phe	Leu	Cys	Thr	Phe	Thr	Phe	Asn
2188									2215
Ser	Asn	Asn	Lys	Glu	Tyr	Thr	Phe	Pro	Ile
								2242	
Thr	Leu	Ser	Ser	Thr	Ser	Asn	Pro	Pro	His
							2269		
Gly	Leu	Pro	Ser	Thr	Leu	Arg	Trp	Phe	Phe
						2296			
Asn	Leu	Phe	Gln	Leu	Tyr	Arg	Gly	Pro	Leu
					2323				
Asp	Leu	Thr	Ile	Ile	Ile	Thr	Gly	Ala	Thr
				2350					
Asp	Val	Asp	Gly	MET V	Ala	Trp	Phe	Thr	Pro
			2377						
Val	Gly	Leu	Ala	Val	Asp	Thr	Pro	Trp	Val
		2404							
Glu	Lys	Glu	Ser	Ala	Leu	Ser	Ile	Asp	Tyr
	2431								
Lys	Thr	Ala	Leu	Gly	Ala	Val	Arg	Phe	Asn
2458									2485
Thr	Arg	Arg	Thr	Gly	Asn	Ile	Gln	Ile	Arg
								2512	
Leu	Pro	Trp	Tyr	Ser	Tyr	Leu	Tyr	Ala	Val
							2539		
Ser	Gly	Ala	Leu	Asp	Gly	Leu	Gly	Asp	Lys
						2566			
Thr	Asp	Ser	Thr	Phe	Gly	Leu	Val	Ser	Ile
					2593				
Gln	Ile	Ala	Asn	Tyr	Asn	His	Ser	Asp	Glu
				2620					
Tyr	Leu	Ser	Phe	Ser	Cys	Tyr	Leu	Ser	Val
			2647						
Thr	A	Gln	Ser	Glu	Phe	Tyr	Phe	Pro	Arg
		2674							
Ala	Pro	Leu	Asn	Ser	Asn	Ala	MET	Leu	Ser
	2701								

-continued

Thr	Glu	Ser	MET	MET	Ser	Arg	Ile	Ala	Ala
2728									2755
Gly	Asp	Leu	Glu	Ser	Ser	Val	Asp	Asp	Pro
								2782	
Arg	Ser	Glu	Glu	Asp	Arg	Arg	Phe	Glu	Ser
							2803		
His	Ile	Glu	Cys	Arg	Lys	Pro	Tyr	Lys	Glu
						2836			
Leu	Arg	Leu	Glu	Val	Gly	Lys	Gln	Arg	Leu
					2863				
Lys	Tyr	Ala	Gln	Glu	Glu	Leu	Ser	Asn	Glu
				2890					
Val	Leu	Pro	Pro	Pro	Arg	Lys	MET	Lys	Gly
			2917						
Leu	Phe	Ser	Gln	Ala	Lys	Ile	Ser	Leu	Phe
		2944							
Tyr	Thr	Glu	Glu	His	Glu	Ile	MET	Lys	Phe
	2971								
X	Trp	Arg	Gly	Val					
2998									

wherein X is unknown and A is either Gln or Glu.

4,614,794

PROTEIN/POLYSACCHARIDE COMPLEXES

Ian A. Easton, and Stephen D. Gorham, both of Glasgow, Scotland, assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Sep. 24, 1984, Ser. No. 653,619

Claims priority, application United Kingdom, Oct. 4, 1983, 8326542

Int. Cl.[4] **C08H** *1/00, 1/06;* **A61L** *27/00*

U.S. Cl. 530—356 **14 Claims**

1. A process for forming a porous protein/polysaccharide complex, said process comprising treating a solution containing less than 2% w/v of a biodegradable protein, or a hydrolytic degradation product thereof, with a polyanionic plant polysaccharide at a pH which is no higher than the isoelectric pH of said protein or degradation product to precipitate the complex and freeze-drying the complex.

4,614,795

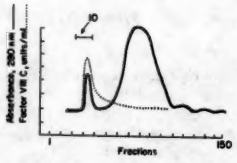
DEGLYCOSYLATED HUMAN FACTOR VIII:C

Stephen I. Chavin, and Philip J. Fay, both of Rochester, N.Y., assignors to University of Rochester, Rochester, N.Y.

Continuation-in-part of Ser. No. 405,456, Aug. 5, 1982, Pat. No. 4,495,175. This application Jan. 13, 1984, Ser. No. 570,728

Int. Cl.[4] **C07G** *7/00;* **A61K** *35/16*

U.S. Cl. 530—383 **2 Claims**



1. A highly purified protein material having F. VIII:C procoagulant activity, free of mature F. VIII:vWF and other procoagulant activities, characterized in that it contains less than 7%–5% by weight of carbohydrate associated therewith,

further characterized by an M_r on SDS/PAGE of about 95,000, having F. VIII:C activity of at least 4,000 AHF units per mg protein and further characterized in that activation of said material by thrombin produces two fragments having an M_r of about 75,000 and the other an M_r about 26,000.

4,614,796

LIPOSOME AND METHOD OF MANUFACTURE THEREFOR

Masanobu Kawamata; Koichi Ushimaru, and Shuji Yamane, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Mar. 25, 1983, Ser. No. 478,903
Int. Cl.[4] C07J 0/00; A61K 31/705
U.S. Cl. 536—5 **15 Claims**

1. A liposome comprising a steryl glucoside and/or a steryl glucoside monopalmitate, water and a lipid selected from the group consisting of natural and synthetic phosphatidyl cholines.

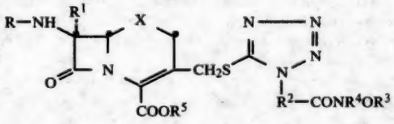
4,614,797

CEPHALOSPORIN HYDROXAMIC ACIDS

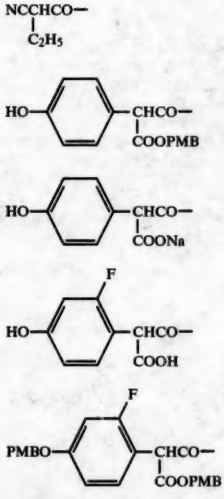
Wataru Nagata, Hyogo; Tsutomu Aoki, and Yasuhiro Nishitani, both of Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Feb. 2, 1984, Ser. No. 576,404
Claims priority, application Japan, Feb. 17, 1983, 58-25940
Int. Cl.[4] C07D 501/36; A61K 31/545
U.S. Cl. 540—226 **12 Claims**

1. A 7β-amino-3-[1-N-hydroxyaminocarbonylalkyl]-1H-tetrazol-5-ylthiomethyl]-3-cephem-4-carboxylic acid derivative represented by the following formula:



wherein R is one of the following acyl groups:



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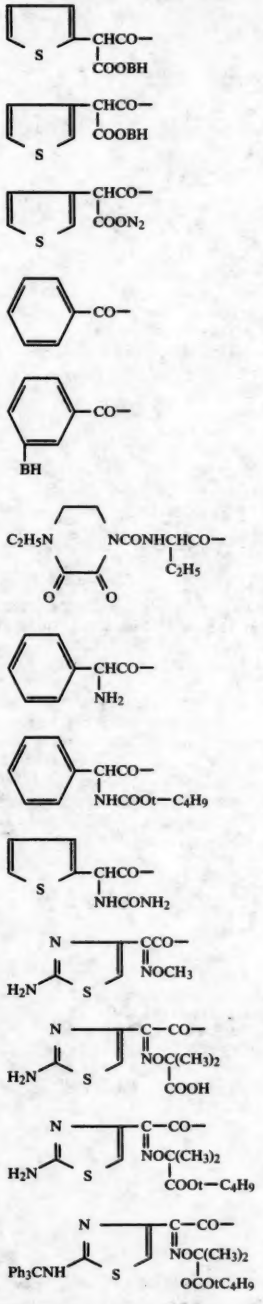

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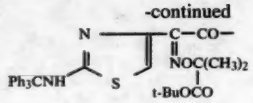
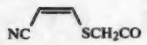
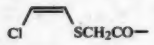
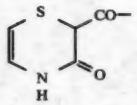








R^1 is hydrogen or methoxy;

R^2 is alkylene;

R^3 is hydrogen alkyl or a hydroxy protecting group;

R^4 is hydrogen, t-butoxyformyl, benzyloxyformyl or p-methoxybenzyl

R^5 is hydrogen, a pharmaceutical acceptable ester or salt; and

X is sulfur, or sulfinyl.

4,614,798

PROCESS FOR THE PRODUCTION OF XYLAZINE

Richard L. Elliott, Kansas City, and Paul H. Ruehle, Gladstone, both of Mo., assignors to Vetamix, Shenandoah, Iowa

Filed Apr. 9, 1985, Ser. No. 721,362

Int. Cl.[4] C07D *279/04*; C07C *161/02*

U.S. Cl. 544—53 **8 Claims**

1. In the preparation of 2,6-dimethylphenylisothiocyanate by reacting N-(2,6-dimethylphenyl)acetamide with sodium hydride in an organic solvent to form the corresponding anion of said amide, then reacting carbon disulfide with said anion to form said 2,6-dimethylphenylisothiocyanate, the improvement wherein the organic solvent is selected from the group consisting of tetrahydrofuran and a mixture of N,N-dimethylacetamide and toluene in a weight ratio of 1:4 to 4:1.

4,614,799

N-METHYLOL 4-AMINO-1,2,4-TRIAZINE-5-ONES

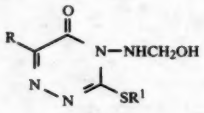
Stanley Tocker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 13, 1984, Ser. No. 681,260

Int. Cl.[4] C07D *253/06*

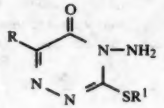
U.S. Cl. 544—182 **5 Claims**

1. A process for preparing an N-methylol derivative of the Formula I



I

where R is C_3–C_6 alkyl and R^1 is C_1–C_2 alkyl, comprising reacting formaldehyde and a compound of the Formula II



II

where R and R^1 are as above, in a water-based suspension in the presence of a base the pH being just above 7 to about 11.5, the reaction temperature about 5° to 90° C. and the base being selected from alkali metal carbonate, alkali metal hydroxide, alkaline earth metal hydroxide, tertiary amine, pyridine, dimethylaniline and anion exchange resin.

4,614,800

SYNTHESIS OF CYCLIC DINITRAMINES USEFUL AS EXPLOSIVE AND PROPELLANT INGREDIENTS, GAS GENERANTS AND IN OTHER ORDNANCE APPLICATIONS

Rodney L. Willer, New London, Pa., and Ronald L. Atkins, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1985, Ser. No. 702,200

Int. Cl.[4] C07D *239/02*

U.S. Cl. 544—335 **6 Claims**

1. A method for preparing cyclic 1,3 dinitramines comprising the steps of:

reacting a cyclic 1,3 dinitrosamine with a solution of N_2O_5 in 100% nitric acid under controlled reaction conditions; and

recovering the cyclic 1,3 dinitramine thus produced.

5. As a composition of matter, 4-methyl-1,3-dinitro-1,3-diazacyclopentane.

6. As a composition of matter, 4-methyl-1-1,3-dinitro-1,3-diazacyclohexane.

4,614,801

DIRECT POSITIVE DYES MADE FROM 3-INDOLIZINE CARBOXALDEHYDE

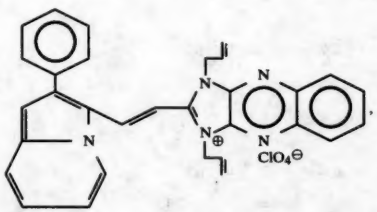
James W. Wheeler, Fairport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 598,187, Apr. 9, 1984, abandoned. This application Apr. 2, 1985, Ser. No. 719,053

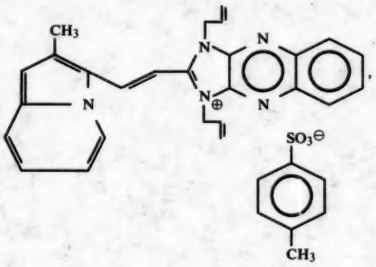
Int. Cl.[4] G03C *1/733*; C07D *519/00, 487/04*

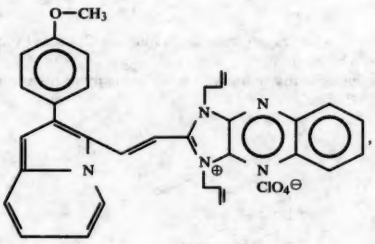
U.S. Cl. 544—345 **2 Claims**

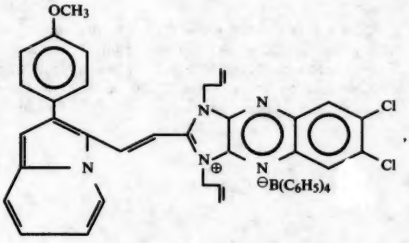
1. A spectral sensitizing dye selected from the group consisting of

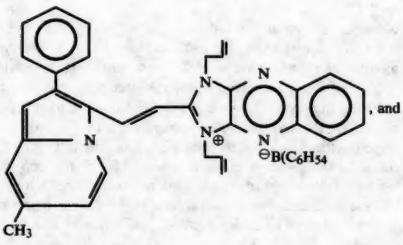


-continued

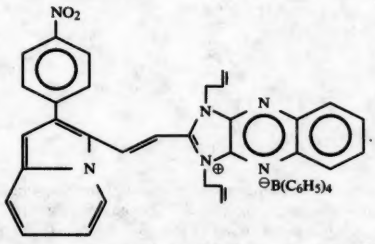








, and



4,614,802
6-SUBSTITUTED AMINO-4H-PYRANO(3,2-G)QUINOLINE-2,8-DICARBOXYLIC ACID INTERMEDIATES

Robert G. M. Wright, Loughborough, England, assignor to Fisons plc, Ipswich, England

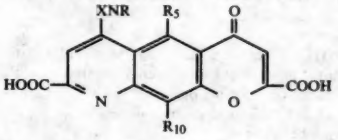
Division of Ser. No. 424,392, Sep. 27, 1982, Pat. No. 4,471,119. This application Jun. 4, 1984, Ser. No. 616,920

Claims priority, application United Kingdom, Oct. 10, 1981, 8130643

Int. Cl.⁴ C07D *491/052*

U.S. Cl. 546—89 **3 Claims**

1. A compound of the formula



in which

R is hydrogen or alkyl C_1 to C_6 and R_5 and R_{10}, which may be the same or different are hydrogen or alkyl C_1 to C_6,

X represents a group —AR_6,

A is CO or SO_2 and R_6 is halogen, haloalkyl C_1 to C_6, alkoxy C_1 to C_6, phenoxy optionally substituted by halogen or phenyl optionally substituted by alkyl C_1 to C_6, or a salt, ester or amide thereof.

4,614,803
PROCESS FOR THE PREPARATION OF DRY ALKALI METAL SALTS OF 1,8-NAPHTHALIMIDE

Ernst Spietschka, Idstein/Taunus, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 28, 1985, Ser. No. 738,577

Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420161

Int. Cl.⁴ C07D *221/04*

U.S. Cl. 546—98 **7 Claims**

1. A process for the preparation of a dry alkali metal salt of 1,8-naphthalimide, which comprises allowing a concentrated alkali metal hydroxide solution to run into solid 1,8-naphthalimide in a molar ratio at a rate corresponding to the degree of reaction, with vigorous stirring in vacuo at an elevated internal temperature, and then carrying out drying without intermediate isolation of the alkali metal salt formed.

4,614,804
ANTHRAQUINOID DYES

Gerhard Epple; Reinhold Krallmann, both of Weisenheim; Wolf-Dieter Kermer, Fussgoenheim, and Hans Weber, Hassloch, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

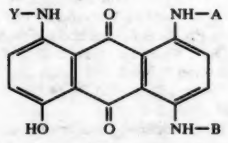
Filed Sep. 14, 1983, Ser. No. 531,995

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233948

Int. Cl.⁴ C07D *277/82*

U.S. Cl. 548—160 **8 Claims**

1. A dye of the formula



wherein

A and B are each

Y is benzothiazolyl, 2-chlorobenzothiazolyl or 5- or 6-chloro, 6-bromo, 5,6-dichloro, 4-, 5-, 6- or 7-methyl, 4-nitro, 6-ethoxy or 6-methoxybenzothiazolyl; or is benzoxazolyl wherein R is (C_1–C_{17})alkyl which may be substituted by chlorine or bromine,

phenyl which may be substituted by chlorine, bromine, (C_1–C_4)alkyl, methoxy, ethoxy, phenoxy or nitro,

(C_1–C_{10})alkoxy,

phenoxy,

phenoxy(C_1–C_3)alkyl which may be substituted by 1 to 3 identical or different substituents selected from the group consisting of chlorine, bromine, methyl and ethyl,

alkoxyalkoxy of 3 to 11 carbon atoms,

(C_7–C_{10})phenalkyl or

(C_1–C_4)alkoxycarbonyl(C_2–C_4)alkyl.

4,614,805

BICYCLIC AMINO ACIDS AS INTERMEDIATES IN THE PREPARATION OF TRICYCLIC AMINO ACIDS AND PROCESSES FOR THEIR PREPARATION

Hansjörg Urbach, Kronberg/Taunus; Rainer Henning, Frankfurt am Main, and Reinhard Becker, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

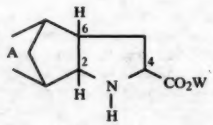
Division of Ser. No. 550,531, Nov. 10, 1983, Pat. No. 4,558,065. This application Sep. 6, 1985, Ser. No. 773,077

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242151

Int. Cl.[4] C07D *209/56*

U.S. Cl. 548—427 **2 Claims**

1. A compound of the formula III



(III)

in which A denotes —CH=CH— or —CH_2—CH_2—, the H atoms on C-2 and C-6 are in the cis-configuration relative to one another, the group —CO_2W on C-4 is orientated in the cis- or trans-position relative to the H atom on C-2 and the pyrrolidine ring is orientated in the exo- or endo-position relative to the bicyclic radical, and in which W denotes hydrogen; (C_2–C_6)-alkyl or aralkyl with 7–9 carbon atoms.

4,614,806

PROCESS FOR THE ASYMMETRIC SYNTHESIS OF CHIRAL INDOLINE-2-CARBOXYLIC ACIDS

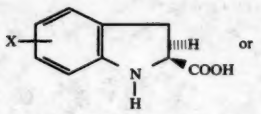
George C. Buzby, Jr., Blue Bell; Michael W. Winkley, and Ronald J. McCaully, both of Malvern, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 565,084, Dec. 23, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,379

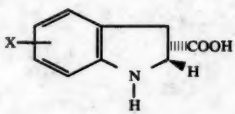
Int. Cl.[4] C07D *209/42*

U.S. Cl. 548—491 **7 Claims**

1. A process for producing an asymmetric indoline-2-carboxylic acid of the structural Formula:



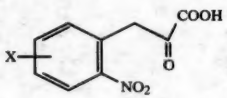
I or (S)



II or (R)

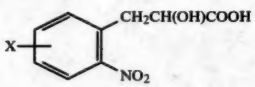
wherein X is hydrogen, bromine, chlorine, C_{1-4} alkyl or C_{1-4} alkoxy, which comprises:

(a) assymetrically reducing an o-nitrophenylpyruvic acid of the Formula



III

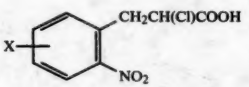
wherein X is as defined above, by contacting the acid III with a reducing complex formed from (R)-proline or (S)-proline, respectively, and sodium borohydride in an inert solvent to form, respectively, an (S) or (R)-α-hydroxy-2-nitrobenzenepropanoic acid of the formula:



IV

wherein X is as defined above;

(b) reacting, respectively, said (S) or (R)-α-hydroxy-2-nitrobenzenepropanoic acid IV wherein X is as defined above, with a Vilsmeier chlorinating reagent in which the chlorinating agent thereof is selected from a group consisting of thionyl chloride, oxalyl chloride, phosphorus oxychloride, phosphorus pentachloride and sulfuryl chloride and the amide thereof is selected from a group consisting of dimethylformamide, diethylformamide, dimethylacetamide and diethylacetamide, said reaction being run at temperatures of at least 20° C., in order to obtain, respectively, and (R) or (S)-α-chloro-2-nitrobenzenepropanoic acid of the formula:



IV

(c) reducing the nitro group of said (R) or (S)-α-chloro-2-nitrobenzenepropanoic acid (V) to an amino group; and

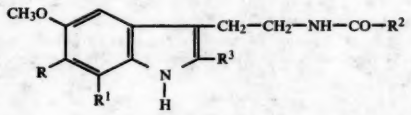
(d) cyclizing the resulting (R) or (S)-α-chloro-2-aminobenzenepropanoic acid in aqueous base.

4,614,807
6,7-DIHALOMELATONINS

Michael E. Flaugh, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

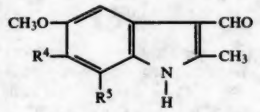
Filed Oct. 4, 1984, Ser. No. 657,632
Int. Cl.[4] C07D *209/18*
U.S. Cl. 548—507 4 Claims

1. A compound of the formula



wherein both R and R^1 are Cl, R^2 is C_{1-3} alkyl and R^3 is H or methyl.

4. A compound of the formula



wherein both R^4 and R^5 are Cl.

4,614,808
PROCESS FOR REACTING MALEIC ANHYDRIDE WITH VINYLBENZENES

Jürgen Olbrich, Dorsten, and Jörg Dörffel, Marl, both of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 27, 1985, Ser. No. 780,876
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435429
Int. Cl.[4] C07D *407/04*
U.S. Cl. 549—236 17 Claims

1. In a process comprising reacting maleic anhydride with vinylbenzene, divinylbenzene, or a nuclear substituted derivative thereof to form the corresponding tetralin dianhydride, at an elevated temperature, in a reaction-compatible solvent, and in the presence of an inhibitor-effective amount of a hydroquinone,

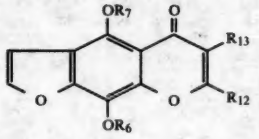
the improvement comprising passing through the reaction mixture, per mole of vinyl group in the vinylbenzene reactant, 2–20 l/h of air (measured under normal conditions: 20° C./1 bar).

4,614,809
ANTIATHEROSCLEROTIC FUROCHROMONES AND INTERMEDIATES THEREFOR

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 378,686, May 17, 1982, Pat. No. 4,459,420.
This application Apr. 25, 1984, Ser. No. 603,533
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.[4] C07D *311/78*
U.S. Cl. 549—387 3 Claims

1. An anti-atherosclerotic furochromone of formula VI:



VI

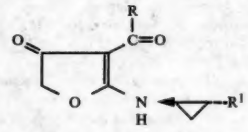
wherein one of R_6 and R_7 is C_1–C_4 alkyl and the other is C_2–C_4 alkyl with the proviso that R_6 and R_7 are different;
wherein R_{12} is $—CH_2—S(O)_n—R_{20}$, wherein n is zero, one or two and R_{20} is C_1–C_5 alkyl;
wherein R_{13} is:
(1) hydrogen, or
(2) chloro, iodo or bromo.

4,614,810
4,5-DIHYDRO-4-OXO-2-[(2-TRANS-PHENYLCYCLOPROPYL)AMINO]-3-FURANCARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Vassil S. Georgiev; Robert A. Mack, both of Rochester, and Clyde R. Kinsolving, Fairport, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 24, 1984, Ser. No. 653,254
Int. Cl.[4] C07D *307/68*
U.S. Cl. 549—479 11 Claims

1. A 4,5-dihydro-4-oxo-2-[(2-trans-phenylcyclopropyl-)amino]-3-furancarboxylic acid or derivative thereof having the general formula:



wherein R is selected from hydroxy, lower alkoxy, and O-alkali metal; and where R^1 is selected from phenyl and phenyl substituted with lower alkyl and/or halogen.

4,614,811
NOVEL ORGANOPLATINUM(II) COMPLEXES AND METHOD FOR THE PREPARATION THEREOF

Ottavio Gandolfi, Rome, Italy, assignor to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 572,180, Jan. 19, 1984, abandoned. This application Mar. 18, 1985, Ser. No. 713,178
Claims priority, application Israel, Jan. 31, 1983, 67789
Int. Cl.[4] C07F *15/00*
U.S. Cl. 536—137 12 Claims

1. Amino-substituted malonato platinum complexes having the general formula:

$$L_2Pt^{II}(OCO)_2CH—NH_2$$

wherein:

L is a monodentate aliphatic amine ligand of the type $HNRR^1$ or an amino acid, wherein, when R=H, R^1 is selected from the group consisting of H, hydroxy, lower alkyl, cycloalkyl, hydroxy lower alkyl, and lower alkoxy; R and R^1 can also be combined to form an imine group;

L_2 is a bidentate aliphatic amine ligand of the type $HNR^2—CHR^3—(CR^4R^5)_n—CHR^6—NHR^7$, wherein n=0 or 1, and R^2, R^3, R^4, R^5, R^6, R^7 are the same or different substituents and are selected from the group consisting of H, hydroxy, lower alkyl, lower alkoxy cycloalkyl; when n=0, R^3 and R^6 can be combined to form

a cycloalkyl group; when n=1, R^3 can be combined with R^4, or R^4 and R^5 can be combined with the carbon atom, to form in each case a cycloalkyl group.

12. A method for the preparation of amino-substituted malonato platinum complexes having the general formula:

$$L_2Pt^{II}(OCO)_2CH—NH_2$$

wherein:

L is a monodentate aliphatic amine ligand of the type $HNRR^1$ or an aminoacid, wherein, when R=H, R^1 is selected from the group consisting of H, hydroxy, lower alkyl, cycloalkyl, hydroxy lower alkyl, and lower alkoxy; R and R^1 can also be combined to form an imine group;

L_2 is a bidentate aliphatic amine ligand of the type $HNR^2—CHR^3—(CR^4R^5)_n—CHR^6—NHR^7$, wherein n=0 or 1, and R^2, R^3, R^4, R^5, R^6, R^7 are the same or different substituents and are selected from the group consisting of H, hydroxy, lower alkyl, lower alkoxy, cycloalkyl; when n=0, R^3 and R^6 can be combined to form a cycloalkyl group; when n=1, R^3 can be combined with R^4, or R^4 and R^5 can be combined with the carbon atom, to form in each case a cycloalkyl group;

said method comprising reacting the barium salt of aminomalonic acid with a platinum(II) sulfate intermediate having the general formula L_2PtSO_4, wherein L and L_2 are defined as in the general formula above, to form the complex of the formula $L_2Pt^{II}(OCO)_2CH—NH_2$.

4,614,812

NOVEL PROCESS FOR PROMOTING HYDROSILATION REACTIONS USING A SECOND HYDROSILANE

Curtis L. Schilling, Jr., Croton-on-the-Hudson, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 31, 1985, Ser. No. 815,007
Int. Cl.[4] C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—406 **22 Claims**

1. In the process of preparing compounds containing silicon-carbon bonds by the hydrosilation reaction of a hydrosilyl reactant with an olefinic reactant in the presence of a soluble platinum catalyst, the improvement which comprises operating the process at a temperature below 150° C. and employing, as a reaction promoter, a hydrosilyl compound whereby said hydrosilyl reactant has a composition different from the composition of said promoter and whereby said promoter provides (i) a 20% increase in the amount of silicon-carbon compounds, or (ii) a 20% increase in reaction rate relative to an unpromoted reaction.

4,614,813

PROCESS FOR THE PREPARATION OF N-HYDROXY ORGANO IMIDATE COMPOUNDS

Chempolil T. Mathew, Randolph, and Harry E. Ulmer, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 12, 1984, Ser. No. 599,433
Int. Cl.[4] C07C *119/18*
U.S. Cl. 558—7 **24 Claims**

1. A process for preparing a compound of the formula:

$$R_1—\underset{\displaystyle O—R_2}{\overset{\displaystyle \|}{C}}=NOH$$

wherein:

R_1 is substituted or unsubstituted alkyl, alkoxyalkyl, cycloalkyl or phenylalkyl wherein permissible substituents are one or more halogen, nitro, cyano or perhaloalkyl groups; and

R_2, is alkyl, alkenyl, alkynyl, alkoxyalkyl, cycloalkyl, cycloalkenyl, phenyl or phenylalkyl either unsubstituted or substituted with one or more cyano, nitro, halogen, alkyl, alkoxy, alkylthio, arylthio, perhaloalkyl, alkylsulfinyl, alkylsulfonyl, amido, or alkoxycarbonyl groups, said process comprising the steps of:

(a) reacting an oxime compound of the formula $R_1CH=NOH$ with a halogenating agent under substantially anhydrous conditions in an organic solvent which is substantially non-reactive with said halogenating agent under the reaction conditions to form the corresponding 1-halosubstituted oxime compound of the formula $R_1C(X)=NOH$ wherein X is halogen; and

(b) reacting said 1-halosubstituted oxime compound in said solvent under substantially anhydrous conditions with an Alkali metal or Alkaline Earth metal alcoholate of the formula R_2OM wherein M is an Alkali metal or Alkaline Earth metal cation.

4,614,814

MONOALKYLATION OF DIHYDROXY AROMATIC COMPOUNDS

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 17, 1985, Ser. No. 724,363
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—61 **6 Claims**

1. A process for the reduction of the diether impurities formed when a dihydroxy aromatic compound is reacted with an alkylating agent in an alcoholic solvent inthe presence of two to three equivalents of base, M^+B^-, wherein M^+ is an alkali metal or alkaline earth metal cation and B^- is a basic function selected from the group consisting of methoxide, ethoxide or hydride; wherein the dihydroxy aromatic compound has the formula:

wherein Y is an aromatic compound of up to three fused rings or Y is a heterocyclic aromatic compound, said aromatic or heteroaromatic compounds optionally substituted by halogen, alkoxy or alkyl, and the alkylating agent has the formula:

W—A—Z

wherein W is a halogen atom, A is an optionally substituted straight chain or branched chain alkyl group of from 1 to about 20 carbon atoms in which the chain may be interrupted by oxygen or sulfur or A is an aralkylene radical or an alkenylene group, and Z is an electron withdrawing group; which process comprises removing by distillation a quantity of alcoholic solvent, then adding to the reaction product an aprotic solvent capable of forming a two-phase system with the alcoholic solvent to extract into the aprotic solvent the diether impurity and yield a product with a monoether/diether ratio from about 20 to about 200.

4,614,815

PROCESS FOR PRODUCING DIESTERDIAMIDES

Franco Cognigni, Pisticci, and Armando Mariano, Pisticci Scalo, both of Italy, assignors to Anic S.p.A., Palermo, Italy

Continuation of Ser. No. 171,090, Jul. 22, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 385,529
Claims priority, application Italy, Sep. 10, 1979, 25570 A/79
Int. Cl.[4] C07C *67/00*
U.S. Cl. 560—88 **3 Claims**

1. In a process for the preparation of a diesterdiamides comprising the step of reacting under non-anhydrous conditions a diamine with at least two molar equivalents of a diester, in the presence of a sodium or a lithium alcoholate catalyst and in a solvent selected from mixtures of alcohols and hydrocarbons to form the desired diesterdiamide and, as a by-product, an

ester salt derived from the diester starting material, and further comprising the step of collecting on a filter the precipitate, consisting mainly of the diesterdiamide product, and collecting the filtrate consisting of unreacted starting materials, solvent, catalyst and said diester salt, the improvement which comprises washing the diesterdiamide cake with a solvent mixture of the same type used in the reaction mixture, combining said wash solution with the previous filtrate, reducing the volume of the resulting solution by distillation, removing therefrom the ester salt which precipitates, and recovering the unreacted starting materials, solvent and catalyst for reutilization in the initial reaction.

4,614,816
PREPARATION OF CARBOXYLIC ACIDS AND ESTERS THEREOF

David J. Drury, Twickenham, and Peter S. Williams, Hull, both of England, assignors to BP Chemicals Limited, London, England

Filed Oct. 13, 1983, Ser. No. 541,379

Claims priority, application United Kingdom, Oct. 20, 1982, 8229988; Jan. 13, 1983, 8300888

Int. Cl.[4] C07C *67/38, 51/353*

U.S. Cl. 560—243 **13 Claims**

1. A process for the preparation of a carboxylic acid or an ester thereof, the carboxylic acid having at least two carbon atoms more than formic acid, which comprises reacting, at elevated temperature, formic acid, or an ester thereof, with an olefin in the presence of, an effective amount of

a catalyst comprising (a) iridium and (b) a strong acid having a pK of less than 0 (as measured in water) wherein the catalyst causes the addition of the formic acid or ester to the olefin thereby forming the acid having at least two carbon atoms more than formic acid or the ester thereof.

4,614,817
MAKING NITRODIARYLAMINES

Otto W. Maender, Copley, and Helmut L. Merten, Hudson, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1983, Ser. No. 562,767

Int. Cl.[4] C07C *85/04*

U.S. Cl. 564—406 **19 Claims**

1. The method of producing a nitrodiarylamine comprising the steps of

(A) combining the formyl derivative of an aromatic primary amine and a nitrohaloarene at condensation temperature for forming nitrodiarylamine and

(B) admixing thereto a sodium, potassium, rubidium or cesium alkoxide.

4,614,818
PROCESS FOR THE PREPARATION OF AMINO-FLUORO-S-TRIAZINE DYES BY REACTION OF CYANURIC FLUORIDE WITH AN AMINO DYE AND AN AMIDE IN ONE OPERATION

Rolf Deitz, Basel, and Herbert Seiler, Riehen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

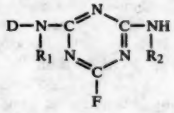
Continuation of Ser. No. 268,306, May 29, 1981. This application Jan. 18, 1983, Ser. No. 458,800

Claims priority, application Switzerland, May 30, 1980, 4229/80

Int. Cl.[4] C09B *62/06, 62/085, 62/095, 62/10*

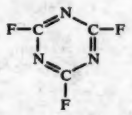
U.S. Cl. 534—598 **8 Claims**

1. A process for the preparation of a dye of the formula



(1)

in which D is a dye radical and R_1 and R_2 independently of one another is (sic) hydrogen or C_{1-4}-alkyl, which comprises reacting cyanuric fluoride of the formula



(2)

simultaneously with a dye of the formula

(3)

and with an ammonium salt of an amine of the formula

(4)

in a neutral to alkaline medium, said process being one in which the cyanuric fluoride is introduced into an aqueous solution containing the amino dye and the ammonium salt of the amine.

4,614,819
NOVEL PROCESS FOR PRODUCING CEPHALOSPORINS

Takashi Nagai; Hirokazu Ochiai, both of Toyama; Takihiro Inaba, Namerikawa; Isao Myokan, Toyama; Hiroshi Sadaki, Tokyo, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

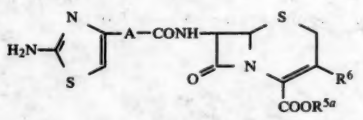
Filed Sep. 19, 1984, Ser. No. 652,012

Claims priority, application Japan, Sep. 20, 1983, 58-172254

Int. Cl.[4] C07D *501/22, 501/24, 501/36*

U.S. Cl. 540—222 **8 Claims**

1. A process for producing a cephalosporin represented by the formula [I] or a salt thereof:



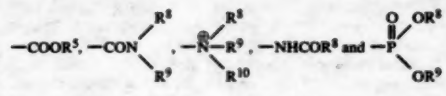
[I]

wherein R^{5a} is a hydrogen atom or a carboxyl-protecting group; R^6 is a hydrogen atom, a halogen atom, a lower alkyl group or a group represented by the formula, $—CH_2R^7$ in which R7 is a hydroxyl group or a C_{1-12} acyloxy, carbamoyloxy, C_{1-12} acylamino, phenyl, tolyl, naphthyl, indanyl, thienyl or furyl group or a heterocyclicthio group, selected from the group consisting of furylthio, thienylthio, pyrrolylthio, pyrazolylthio, imidazolylthio, thiazolylthio, isothiazolylthio, oxazolylthio, isoxazolylthio, oxadiazolylthio, triazolylthio, tetrazolylthio, thiadiazolylthio, imidazolidinylthio, imidazolinylthio, pyrrolidinylthio, pyrazolinylthio, pyrrolinylthio, thiatriazolylthio, oxatriazolylthio, indolylthio, pyridylthio, pyrimidinylthio, pyridazinylthio, pyrazinylthio, pyranylthio, piperazinylthio, piperidylthio, hexamethyleneiminothio, morpholinylthio, triazinylthio, benzothienylthio, benzofurylthio, benzoxazolylthio, benzothiazolylthio,

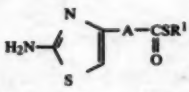
purinylthio, isobenzofurylthio, isoindolylthio, indazolylthio, quinolizinylthio, quinolylthio and isoquinolylthio group or a heterocyclic group selected from the group consisting of 1-(1,2,3,4-tetrazolyl), 2-(1,2,3,4-tetrazolyl), 1-(1,2,3-triazolyl), 2-(1,2,3-triazolyl, 1-(1,2,4-triazolyl), 4-(1,2,4-triazolyl), 2,3-dioxo-1,2,3,4-tetrahydropyrazinyl, 3,6-dioxo-1,2,3,6-tetrahydropyridazinyl, 6-oxo-1,6-dihydropyridazinyl and 2-oxo-1,2-dihydropyrazinyl, and the above-identified groups for R^7 other than hydroxyl group may be substituted by at least one substituent selected from halogen, nitro, oxo, C_{1-14} alkyl, benzyl, phenethyl, 4-methylbenzyl, naphthylmethyl, phenyl, tolyl, naphthyl, indanyl, C_{2-10} alkenyl, hydroxyl, C_{1-14} alkoxy, C_{1-14} alkylthio, cyano, amino, C_{1-14} alkylamino, di-C_{1-14} alkylamino, C_{1-12} acylamino, C_{1-12} acyl, C_{1-12} acyloxy, C_{1-12} acyl-C_{1-14}alkyl, carboxyl, C_{1-14} alkoxycarbonyl, C_{1-14} alkoxycarbonyl-C_{1-14}alkyl, carbamoyl, amino-C_{1-14} alkyl, N-C_{1-14} alkylamino-C_{1-14} alkyl, N, N-di-C_{1-14}-alkylamino-C_{1-14} alkyl, hydroxy-C_{1-14} alkyl, hydroxyimino-C_{1-14} alkyl, C_{1-14} alkoxy-C_{1-14} alkyl, carboxy-C_{1-14} alkyl, sulfo-C_{1-14}alkyl, sulfo, sulfamoyl-C_{1-14}alkyl, sulfamoyl, carbamoyl-C_{1-14}alkyl, carbamoyl-C_{2-10}-alkenyl, and N-hydroxycarbamoyl-C_{1-14} alkyl groups, said thienyl and furyl group in R^7 being attached to the exomethylene group at the 3-position of the cephem ring through a carbon-carbon bond, and said heterocyclic group in R^7 being attached to the exomethylene group at the 3-position of the cephem ring through a carbon-nitrogen bond; and —A— is a methylene group of a group of the formula,

in which R^2 is a hydrogen atom; C_{1-14}alkyl, C_{2-10} alkenyl, C_{2-10}alkynyl, C_{3-7}cycloalkyl, C_{5-7}-cycloalkenyl, benzyl, phenethyl, 4-methylbenzyl, naphthylmethyl, phenyl, tolyl, naphthyl or indanyl group; a heterocyclic group selected from the group consisting of furyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, oxadiazolyl, triazolyl, tetrazolyl, thiadiazolyl, imidazolidinyl, imidazolinyl, pyrrolidinyl, pyrazolinyl, pyrrolinyl, thiatriazolyl, oxatriazolyl, indolyl, pyridyl, pyrimidinyl, pyridazinyl, pyrazinyl, pyranyl, piperazinyl, piperidyl, hexamethyleneimino, morpholinyl, triazinyl, benzothienyl, benzofuryl, benzoxazolyl, benzothiazolyl, purinyl, isobenzofuryl, isoindolyl, indazolyl, quinolizinyl, quinolyl and isoquinolyl; and hydroxyl-protecting group; or a group represented by the formula,

in which, R^3 and R^4, which may be the same or different, are hydroxyl, C_{1-14} alkyl, benzyl, phenethyl, 4-methylbenzyl, naphthylmethyl, phenyl, tolyl, naphthyl, indanyl, C_{1-14} alkoxy, benzyloxy, phenethyloxy, 4-methylbenzyloxy, naphthylmethyloxy, furyloxy or thienyloxy groups, and the above defined C_{1-14} alkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-7} cycloalkyl, C_{5-7} cycloalkenyl, benzyl, phenethyl, 4-methylbenzyl, naphthyl, phenyl, tolyl, naphthylmethyl, indanyl and heterocyclic rings for R^2 may optionally be substituted by at least one substituent selected from the group consisting of halogen atoms, oxo, cyano, hydroxyl, C_{1-14} alkoxy, amino, C_{1-14} alkylamino, di-C_{1-14} alkylamino, the heterocyclic groups defined above in R^2 and groups represented by the formulas,

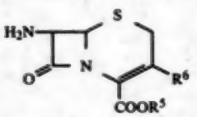


(in which R^5 is a carboxyl-protecting group and R^8, R^9 and R^{10}, which may be the same or different, are hydrogen atoms or C_{1-14} alkyl, benzyl, phenethyl, 4-methylbenzyl, naphthylmethyl, phenyl, tolyl, naphthyl or indanyl groups), and the bond represents a syn or anti-isomer or a mixture thereof, which comprises reacting a compound represented by the formula [II]:



[II]

wherein —A— has the same meaning as defined above, and R^1 is an unsubstituted C_{1-14} alkyl or phenyl group, with a compound represented by the formula [III]:



[III]

wherein R^5 and R^6 have the same meanings as defined above, in the presence of boron trifluoride or a complex compound thereof, and in the presence of an organic solvent, and then, if desired, removing the carboxyl-protecting group or converting the product to a salt.

4,614,820

3,6-DISUBSTITUTED-1,8-NAPHTHALIMIDES

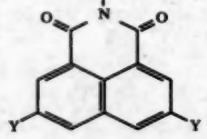
Robert K. Zee-Cheng, Shawnee, and Chia C. Cheng, Leawood, both of Kans., assignors to Warner-Lambert Co., Morris Plains, N.J.

Continuation of Ser. No. 700,343, Feb. 13, 1985, abandoned, which is a continuation of Ser. No. 581,594, Feb. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 481,122, Apr. 1, 1983, Pat. No. 4,499,266. This application Feb. 13, 1986, Ser. No. 829,468

Int. Cl.[4] *C07D 221/14, 413/06*

U.S. Cl. 544—126 **3 Claims**

1. 3,6-Disubstituted-1,8-naphthalimide compounds having in free base form the structural formula I:



and the pharmaceutically acceptable salts thereof, where n is 2 or 3, R_1 and R_2 are H, lower alkyl, lower hydroxyalkyl, pyrrolidinyl, morpholino, or piperidinyl, and Y is NH_2.

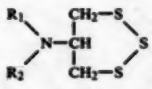
4,614,821

METHOD OF PRODUCING 1,2,3-TRITHIANE COMPOUNDS

Kazuaki Kihara, and Makoto Kuroda, both of Hikari, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 666,101, Oct. 29, 1984, abandoned. This application Jan. 16, 1986, Ser. No. 819,483
Claims priority, application Japan, Oct. 28, 1983, 58-203146
Int. Cl.[4] C07D *341/00, 409/04, 413/04*
U.S. Cl. 544—145 3 Claims

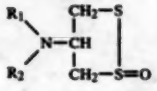
1. A process for producing a 1,2,3-trithiane compound of the formula:



(I)

wherein each of R_1 and R_2 is independently alkyl of 1 4 carbon atoms, or alternatively, R_1 and R_2 together with the adjacent nitrogen atom form a 5- or 6-membered heterocyclic group which may further contain an oxygen, sulfur or nitrogen atom, or a salt thereof,

which comprises (1) reacting a compound of the formula:

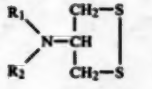


(III)

wherein R_1 and R_2 are as defined above, or a salt thereof, with a compound of the formula:

Me_2S (II)

wherein Me is hydrogen, an alkali metal atom or an ammonium radical, under an acid condition, (2) oxidizing the resulting by-product compound of the formula:



(IV)

wherein R_1 and R_2 are as defined above, or a salt thereof, and (3) reacting the resulting compound (III), or a salt thereof, with the compound (II) under an acid condition to produce the compound (I), or a salt thereof.

4,614,822

CATALYTIC OXIDATION OF 3,3-DIMETHYL-2-HYDROXYBUTYRIC ACID TO 2-OXO ACID AND PREPARATION OF 4-AMINO-6-TERT.-BUTYL-3-THIO-1,2,4-TRIAZINE-5(4-H)-ONE

Dennis E. Jackman, Prairie Village, Kans., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 960,330, Nov. 13, 1978, abandoned. This application Aug. 26, 1980, Ser. No. 181,542
Int. Cl.[4] C07C *51/373, 59/185;* C07D *253/06*
U.S. Cl. 544—182 8 Claims

1. A process for the preparation of a salt of 3,3-dimethyl-2-oxo-butyric acid comprising reacting 3,3-dimethyl-2-hydroxybutyric acid with a hypochlorous acid salt under alkaline conditions in the presence of ruthenium as catalyst.

8. In the production of 4-amino-6-tert.-butyl-3-thio-1,2,4-triazin-5(4-H)-one by oxidizing 3,3-dimethyl-2-hydroxybutyric acid to 3,3-dimethyl-2-oxo-butyric acid and condensing the 3,3-dimethyl-2-oxo-butyric acid with thiocarbohydrazide, the improvement which comprises effecting the oxidation by adding sodium 3,3-dimethyl-2-hydroxybutyric acid to water along with ruthenium dioxide hydrate, maintaining the pH between about 10 and 13, maintaining the temperature between about 40° and 60° C., adding sodium hypochlorite to the water in at least stoichiometric amount, filtering the solution to separate the catalyst from the solution containing sodium 3,3-dimethyl-2-oxobutyrate, and directly condensing the solution with thiocarbohydrazide.

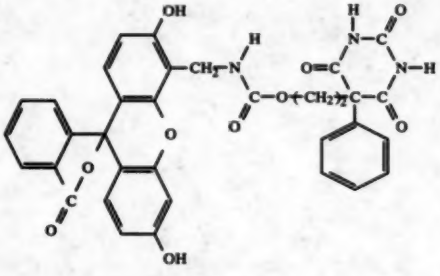
4,614,823

AMINOMETHYLFLUORESCEIN DERIVATIVES

Curtis L. Kirkemo, Grunee, and Mohammed T. Shipchandler, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 440,043, Nov. 8, 1982, Pat. No. 4,510,251. This application Jul. 11, 1984, Ser. No. 607,832
Int. Cl.[4] C07D *239/62, 473/08, 493/12*
U.S. Cl. 544—300 1 Claim

1. A compound having the formula:



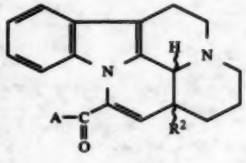
4,614,824

NOVEL APOVINCAMINIC ACID DERIVATIVES

János Kreidl; László Czibula; György Visky; Mária Farkas née Kirják; Judit Mészáros née Brill; Dóra Groó; Éva Pálosi; Egon Kárpáti, and László Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Continuation of Ser. No. 508,661, Jun. 28, 1983, abandoned. This application Jul. 11, 1985, Ser. No. 754,671
Claims priority, application Hungary, Jun. 30, 1982, 2128/82
Int. Cl.[4] C07D *461/00;* A61K *31/435*
U.S. Cl. 546—51 1 Claim

1. Racemic and optically active apovincaminic acid compounds of the formula



wherein

A is —O—$(CH_2)_n$—OR^1,

in which

R^1 is alkyl of 1 to 6 carbon atoms,

n is 2,

R^2 stands for an alkyl group of 1 to 6 carbon atoms, which may be identical or different from R^1,

and the hydrogen in the 3-position and the R^2 group have an α,α- and/or β,β- or α,β- and/or β,α-configuration, and pharmaceutically acceptable acid addition salts thereof.

4,614,825
7-OXABICYCLOHEPTANE AND 7-OXABICYCLOHEPTENE COMPOUNDS

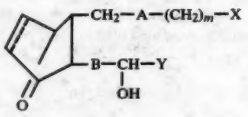
David L. Snitman, Boulder, Colo.; Martin F. Haslanger, Lambertville, and Peter W. Sprague, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 378,547, May 17, 1982, Pat. No. 4,537,981, which is a continuation-in-part of Ser. No. 319,511, Nov. 9, 1981, abandoned. This application Jul. 25, 1985, Ser. No. 758,908

Int. Cl.[4] A61K *31/41, 31/335;* C07D *257/04, 307/00*

U.S. Cl. 548—252 12 Claims

1. A compound having the structural formula

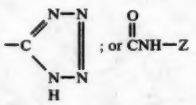


and including all stereoisomers thereof;

wherein A and B may be the same or different and A is CH=CH or $(CH_2)_2$,

B is CH=CH, C≡C, or $(CH_2)_2$; m is 1 to 8;

X is



wherein Z is SO_2—Q (wherein Q is lower alkyl or aryl),

or OR^2 wherein R^2 is H;

Y is alkyl; substituted alkyl; aryl-lower alkyl; alkenyl; alkynyl; aryl; pyridyl; pyridyl-lower alkyl; substituted pyridyl; thienyl; thienylalkyl; substituted thienyl; cycloalkyl; substituted cycloalkyl; cycloalkylalkyl or substituted cycloalkylalkyl;

and ------ represents a single bond or double bond with the proviso that where ------ represents a double bond, A is CH=CH and B is CH=CH or $(CH_2)_2$ and Y is other than alkenyl or alkynyl;

wherein alkyl or lower alkyl by itself or as part of another group contains 1 to 12 carbons and unless otherwise indicated may be unsubstituted or substituted with a halo, CF_3, alkoxy, aryl, alkyl-aryl, haloaryl, cycloaklyl or alkyl-cycloalkyl substitutent;

the term alkenyl by itself or as part of another group contains 3 to 6 carbons;

the term alkynyl by itself or as part of another group contains 3 to 6 carbons;

the term aryl by itself or as part of another group is phenyl or naphthyl unsubstituted or substituted with lower alkyl, halogen or lower alkoxy;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and may be unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyls and/or 1 or 2 lower alkoxy groups;

the term substituted pyridyl refers to a pyridyl group substituted with 1 or 2 halogen or 1 or 2 lower alkyl groups;

the term substituted thienyl refers to a thienyl group substituted with 1 or 2 halogens or 1 or 2 lower alkyl groups;

the term $(CH_2)_m$ refers to straight or branched chain radicals haging from 1 to 8 carbons in the normal chain.

4,614,826
POLYGLYCIDYL ETHERS OF POLYNUCLEAR POLYHYDRIC PHENOLS

Shigeru Katayama, Ichihara; Takayuki Nakano, Ohtake, and Nobuyuki Takeda, Chiba, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

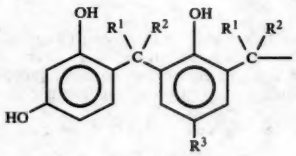
Filed Feb. 27, 1984, Ser. No. 583,636

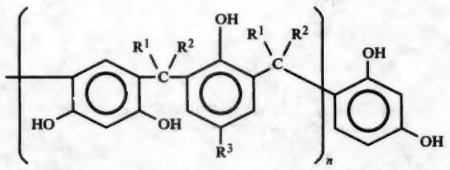
Claims priority, application Japan, Feb. 28, 1983, 58-30759; Feb. 28, 1983, 58-30761

Int. Cl.[4] C07D *303/26, 303/27*

U.S. Cl. 549—559 4 Claims

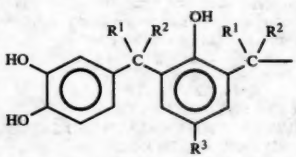
2. A polyepoxy compound consisting of a polyglycidyl ether of a polyhydric phenol of the formula:

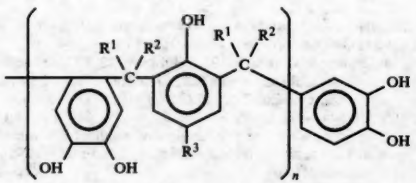




wherein R^1 and R^2 represent a hydrogen atom, R^3 represents CH_3, t—C_4H_9 or Cl, and n is 0 or 2, and wherein at least 80% of the phenolic hydroxyl groups are converted to glycidyl ether groups.

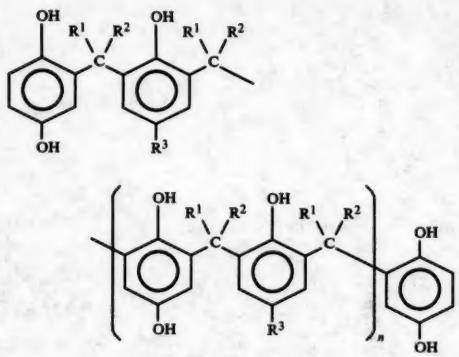
3. A polyepoxy compound consisting of a polyglycidyl ether of a polyhydric phenol of the formula:





wherein R^1 and R^2 represents a hydrogen atom, R^3 represents CH_3, and n is 0, and wherein at least 80% of the phenolic hydroxyl groups are converted to glycidyl ether groups.

4. A polyepoxy compound consisting of a polyglycidyl ether of a polyhydric phenol of the formula:



wherein R^1 and R^2 represent a hydrogen atom, R^3 represents CH_3, and n is 0, and wherein at least 80% of the phenolic hydroxyl groups are converted to glycidyl ether groups.

4,614,827

METHOD FOR ISOLATING VINYL SALT COMPOUNDS FROM AQUEOUS SOLUTIONS

Peter J. Arndt, Seeheim-Jugenheim; Franz Wenzel, Darmstadt; Manfred Müller, Rossdorf, and Fritz Schlosser, Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 10, 1984, Ser. No. 629,358

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326117; May 19, 1984, 3418664

Int. Cl.[4] C07F 3/06

U.S. Cl. 556—131 **12 Claims**

1. A method for isolating a monomeric salt of a polymerizable vinylcarboxylic acid or of a quaternized amide of a polymerizable vinylcarboxylic acid in solid form from an aqueous solution thereof, which comprises spray drying such an aqueous salt solution.

4,614,828

TRICHLOROMETHYLPHOSPHONODITHIOATES

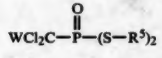
Gary W. Kraatz, San Jose; Charles G. Chavdarian, Martinez, and Valerie F. Heusinkveld, Berkeley, all of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Filed Sep. 10, 1984, Ser. No. 649,037

Int. Cl.[4] C07F 9/40

U.S. Cl. 558—203 **2 Claims**

1. A compound having the formula



in which W is chlorine and R^5 is C_1–C_6 alkyl or C_2–C_4 alkenyl.

4,614,829

PROCESS FOR THE PREPARATION OF α-CHLORINATED CHLOROFORMATES

Thierry A. Malfroot, Saint-Germain-les-Corbeil, and Jean-Pierre G. Senet, La Chapelle la Reine, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Aug. 17, 1984, Ser. No. 641,602

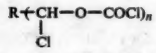
Claims priority, application France, Aug. 26, 1983, 83 13795

The portion of the term of this patent subsequent to Jun. 3, 2003, has been disclaimed.

Int. Cl.[4] C07C 68/02

U.S. Cl. 558—283 **12 Claims**

1. A process for the preparation of an alphachlorinated chloroformate of formula:



wherein R is hydrogen, saturated or unsaturated, unsubstituted C_1–C_{12} aliphatic, cycloaliphatic hydrocarbon radical, or unsubstituted aromatic hydrocarbon radical or R is $—CCl_3$ or the radical from chlorobenzaldehyde and n = 1 or 2, which consists of reacting a trichloromethyl derivative which is trichloromethyl chloroformate or di(trichloromethyl)carbonate with an aldehyde of formula $R(CHO)_n$ wherein R and n are as defined hereinabove, in the presence of 2–7% mole with respect to said aldehyde of a compound which is a member selected from the group consisting of pyridine, alkyl pyridines, N,N-disubstituted amides, tetrasubstituted ureas and thioureas, phosphoroamides substituted on the nitrogen and reaction products thereof with a chlorinating agent, quaternary ammonium halides or alkali or alkaline earth metal halides wherein the cation is sequestrated by a crown ether or a cryptand.

4,614,830

ESTERIFICATION PROCESS

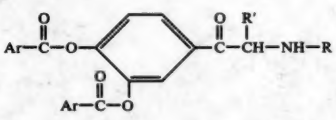
Richard E. Philion, Sand Lake, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Aug. 9, 1985, Ser. No. 764,163

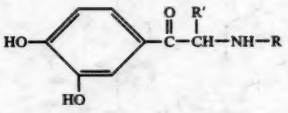
Int. Cl.[4] C07C 69/76

U.S. Cl. 560—109 **6 Claims**

1. In the process for preparing an acid-addition salt of a compound of the formula



wherein Ar is phenyl or phenyl substituted by 1–3 members of the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, halo, trifluoromethyl, dialkylamino having 2–8 carbon atoms and alkanoylamino having 1–6 carbon atoms; R is alkyl having 1–4 carbon atoms or cycloalkyl having 3–6 carbon atoms; and R′ is hydrogen or alkyl of 1–2 carbon atoms, by esterification of the corresponding diphenolic compound of the formula



or an acid-addition salt thereof with an acid chloride of the formula ArCOCl;

the improvement which comprises treating said diphenolic

compound in a polar aprotic solvent with at least two molar equivalents of said acid chloride in the presence of a catalytic amount of a 4-di-lower-alkylaminopyridine or 4-(1-pyrrolidinyl)pyridine, and an acid-acceptor comprising a tertiary amine or sterically-hindered secondary amine present in an amount (a) approximately stoichiometric with respect to the acid chloride when an acid-addition salt of the diphenolic compound is used; or (b) in an amount approximately one-half stoichiometric with respect to the acid chloride when the free base form of the diphenolic compound is used.

4,614,831

PROCESS FOR PREPARING ALKYL SUBSTITUTED PARA-CARBOALKOXY CYCLOHEXANONES

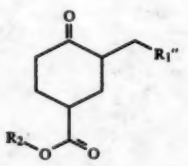
Mark A. Sprecker, Sea Bright; Wilhelmus J. Wiegers, Red Bank; Robert P. Belko, Woodbridge, and Richard M. Boden, Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 747,551, Jun. 21, 1985, which is a division of Ser. No. 563,801, Dec. 21, 1983, Pat. No. 4,537,704. This application Sep. 3, 1985, Ser. No. 771,820

Int. Cl.[4] **C07C** *67/30, 67/303, 69/757;* **C11B** *9/00*

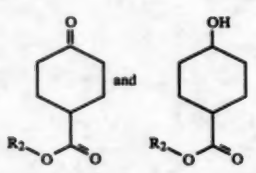
U.S. Cl. 560—126 **1 Claim**

1. The process for preparing the compound having the structure:

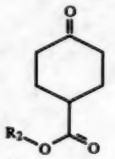


wherein R_1'' represents C_1–C_6 alkyl and R_2 is selected from the group consisting of ethyl and methyl comprising the step of reacting the compound having the structure:

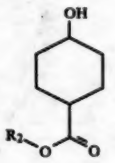
with hydrogen in the presence of a palladium catalyst at temperatures in the range of from about 130° C. up to about 170° C. and pressures in the range of from about 40 psig up to about 100 psig in order to create a mixture of compounds having the structures:



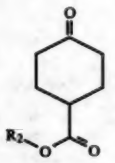
and separating by means of fractional distillation the compound having the structure:



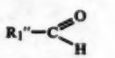
from the compound having the structure:



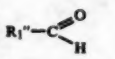
and then reacting the compound having the structure:



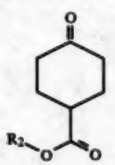
with an aldehyde defined according to the structure:



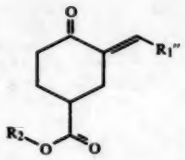
in the presence of hydrogen chloride gas at a temperature in the range of from about −10° C. up to about +10° C. and in the presence of a solvent inert to the reactants or products of reaction, the ratio of aldehyde having the structure:



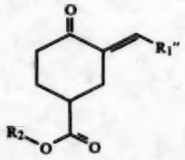
to ketone having the structure:



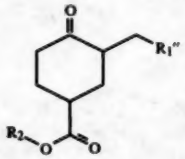
varying from about 0.5:1.5 up to about 1.5:05, thereby forming the compound having the structure:



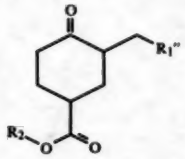
and then reacting the compound having the structure:



with hydrogen in the presence of a palladium-on-carbon catalyst or a palladium-on-calcium carbonate catalyst at a pressure in the range of 35 psig up to 150 psig in the presence of an inert solvent in order to form the compound having the structure:



and then recovering the compound having the structure:



by means of fractional distillation.

4,614,832

DIALKYL OXALATES FROM CARBON MONOXIDE AND AN ALCOHOL

Steven P. Current, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 17, 1979, Ser. No. 104,333
Int. Cl.⁴ C07C *67/36*
U.S. Cl. 560—204 **12 Claims**

1. A process for preparing dialkyl oxalates by the oxidative carbonylation reaction which comprises contacting a normally liquid monohydric saturated aliphatic or alicyclic alcohol containing from 1 to 20 carbon atoms with carbon monoxide in the presence of (1) a catalytic amount of a catalyst comprising palladium in complex combination with a ligand and (2) at least a stoichiometric amount of a quinone, said contacting being conducted at a reaction temperature above about 25° C. and below about 100° C., and a reaction pressure above about 500 psi and below about 1200 psi, said reaction being carried out substantially in the absence of oxygen.

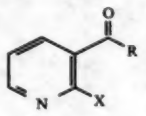
4,614,833

2-HALO-PYRIDINES

Ricardo D. Matas; Jose M. Codina Puigmarti; Jose M. Repolles, and Jorge S. Sera, all of E-Barcelona, Spain, assignors to Lacer, S.A., E-Barcelona, Spain

Filed Jan. 14, 1981, Ser. No. 225,019
Claims priority, application European Pat. Off., Jan. 16, 1980, 80100207.2
Int. Cl.⁴ C07D *213/61*
U.S. Cl. 546—314 **13 Claims**

1. 2-Halo-pyridines of the formula



where X is Cl or Br, and

is selected from the group consisting of benzoyl; 4-fluorobenzoyl; 2,4,6-trimethylbenzoyl; 2,4-difluorobenzoyl; 4-chlorobenzoyl; 2,4-dichlorobenzoyl; 4-phenylbenzoyl; 2,5-dimethylbenzoyl; 4-tert-butyl-benzoyl; 4-methoxylbenzoyl; 4-methylthiobenzoyl; and 4-hydroxybenzoyl and pharmaceutically acceptable salts thereof.

4,614,834

DEHYDROCYCLIZATION WITH NONACIDIC L ZEOLITE

Susan L. Lambert, Rolling Meadows; Randy J. Lawson, Arlington Heights; Russell W. Johnson, Villa Park, all of Ill., and Jean-Pierre Gilson, Columbia, Md., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 736,048, May 20, 1985. This application Sep. 30, 1985, Ser. No. 781,552
Int. Cl.⁴ C07C *2/52*
U.S. Cl. 585—419 **5 Claims**

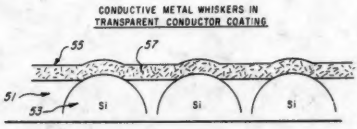
1. A dehydrocyclization process comprising contacting C_6–C_{10} aliphatic hydrocarbons at a pressure of from about 0 psig to about 600 psig, a temperature of from about 800° F. to about 1200° F., a liquid hourly space velocity of from about 0.1 hr^{-1} to about 10 hr^{-1} and a molar ratio of hydrogen to said hydrocarbons of from about 0.1 to about 10 with a catalyst composite comprising nonacidic L zeolite, a catalytically effective amount of Group VIII metal component, and a silica support matrix, said catalytic composite being produced by the method comprising admixing said nonacidic L zeolite with an alkali metal silicate sol, causing the zeolite-containing sol to gel while maintaining the pH of the sol while in contact with the zeolite at a value of at least 7, recovering the resulting catalytic composite, and incorporating a catalytically effective amount of a Group VIII metal in said catalytic composite.

4,614,835

PHOTOVOLTAIC SOLAR ARRAYS USING SILICON MICROPARTICLES

Kent R. Carson, McKinney; Joseph D. Luttmer, Richardson; Charles E. Williams, Dallas; William R. McKee, Plano; Stephen T. Tso, and Elwin L. Johnson, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1983, Ser. No. 562,485
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—250 4 Claims



1. A solar array for converting light to electrical energy, comprising:

(a) an electrically insulating matrix having a pair of opposed surfaces,

(b) a plurality of photovoltaic particles, each particle having a P-type region and an N-type region which form a junction, said particles being secured in said matrix, one of said regions extending to one of said surfaces and the other of said regions extending to the other of said surfaces, said junction extending to said matrix, and

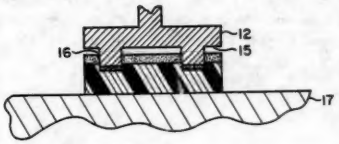
(c) means electrically interconnecting said regions of said particles extending to one of said surfaces, said means including a transparent electrically conductive layer disposed on said one surface and electrically conductive whiskers disposed in said electrically conductive layer.

4,614,837

METHOD FOR PLACING ELECTRICALLY CONDUCTIVE PATHS ON A SUBSTRATE

Robert P. Kane, Camillus; Edwin D. Lillie, Syracuse, and John D. Neidig, Clay, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 3, 1985, Ser. No. 719,789
Int. Cl.[4] H05K *1/00*
U.S. Cl. 174—68.5 36 Claims



1. A method of placing electrically conductive paths on a heat softenable substrate comprising the steps of:

(a) applying a layer of a composition comprising finely divided metal particles to all or a portion of a heat softenable substrate;

(b) compacting said metal particles in a pre-determined circuit pattern by applying a die heated to a temperature less than the melting point of said metal to said metal particles at a pressure and for a time sufficient to compact said particles, said die having the desired circuit pattern thereon and projecting from the surface thereof and acting to compact the metal particles in the areas contacted by the circuit defining portions of said die; and

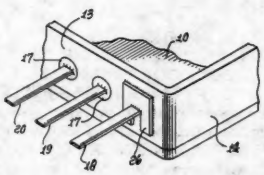
(c) embedding said compacted metal particles into said surface of said substrate by continuing the application of said heated die to said compacted metal particles for a time sufficient to embed said compacted particles in said substrate.

4,614,836

GROUND CONNECTOR FOR MICROELECTRONIC CIRCUIT CASE

Charles L. Carpenter, Irvine; Jerry L. Carter, Pomona, and Terry D. McElwee, Chino, all of Calif., assignors to Axia Incorporated, Anaheim, Calif.

Filed Mar. 19, 1984, Ser. No. 591,106
Int. Cl.[4] H05K *5/04*
U.S. Cl. 174—51 8 Claims



1. A microelectronic circuit case including in combination:

a container with a bottom wall and upstanding side wall defining an open top;

an electrical insulator mounted in one of said walls;

an electrical conducting lead positioned in said insulator; and

an electrical conducting plate attached to said lead and a wall providing an electrical conducting path between said lead and container;

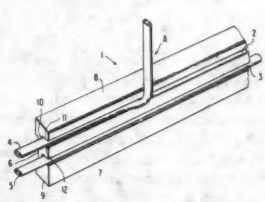
with said plate having a flat face and a slot therein with said slot having an open end, with said face positioned against said wall and with said lead in said slot.

4,614,838

EDGING, PREFERABLY A SKIRTING-BOARD

Rolf I. Sandström, Kamrersvägen 15, Bjärred, Sweden (237 00)

Continuation of Ser. No. 279,989, Jun. 17, 1981, abandoned.
This application Dec. 6, 1983, Ser. No. 558,766
Claims priority, application Sweden, Nov. 1, 1979, 7909058
Int. Cl.[4] E04F *19/04;* H02G *3/04*
U.S. Cl. 174—70 C 6 Claims



1. In combination:

a flexible cable of predetermined cross sectional dimensions, having a width exceeding its thickness; and

a substantially rigid edging having a back wall, a front wall spaced from said back wall, and opposed top and bottom walls connecting said front wall and said back wall;

said edging having at least one groove formed in its front wall receiving and retaining said flexible cable therein without having a cover thereover, said at least one groove having a bottom wall positioned between said front wall and said back wall, and opposed, spaced side walls extending between said bottom wall and said front wall of said edging;

said at least one groove being fully open between said op-

posed side walls exposing said cable and enabling said cable to be readily inserted and removed therefrom;

said groove having a depth exceeding its width, said flexible cable of predetermined cross sectional dimensions being received within said groove with the width of said cable juxtaposed along the depth of said groove and being retained therein with a light press fit thereby permitting said cable to be flexibly routed out of said groove either upwardly or downwardly at an arbitrary point along said groove, whereby when said cable is routed out of said groove, said cable tends to twist in said groove and is gripped by said groove as a result.

4,614,839

ROAD-VEHICLE TELEPHONE APPARATUS

Kazuyuki Umebayashi, Tokyo, Japan, assignor to Aisin Seiki K.K., Aichi, Japan

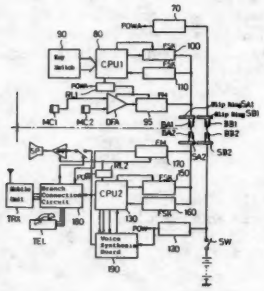
Filed Aug. 12, 1983, Ser. No. 523,299

Claims priority, application Japan, Aug. 19, 1982, 57-143733; Aug. 20, 1982, 57-145308; Aug. 27, 1982, 57-148699

The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

Int. Cl.[4] H04M *1/23*

U.S. Cl. 179—2 E **20 Claims**



1. A road-vehicle telephone apparatus comprising:

a steering operation board composed of a dial key switches, a hook key switch, a first modulation means, and a first control means for applying a signal in accordance with key switch operation to said first modulation means, all these parts being equipped on or near a steering wheel;

a stationary control unit composed of a first demodulation means adapted to demodulate the signal from said first modulation means, a mobile telephone unit, a voice synthesis unit for generating voices, and a second control means which judges switch operation made on said steering operation board based on a signal demodulated by said first demodulation means, which applies a dial signal in accordance with the switch operation to said mobile telephone unit, and which commands said voice synthesis unit to generate voices in accordance with the switch operation, said control unit being equipped at a fixed position on the vehicle body mechanically separated from said steering operation board; and

a signal transmission means for connecting said steering operation board and said stationary control unit through at least one of electrical, optical and magnetic means.

4,614,840

TELECOMMUNICATION LINE CIRCUIT AND ASSOCIATED POLARITY REVERSAL CIRCUIT

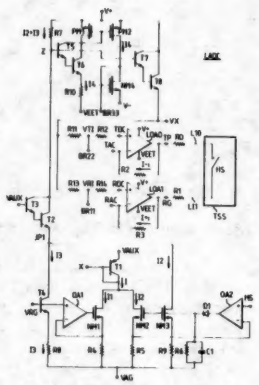
Luc A. Bienstman, Hofstade, and Wlodimir J. Dobosch, Maasmechelen, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,273

Claims priority, application Belgium, Oct. 21, 1983, 2/60231

Int. Cl.[4] H04M *15/28*

U.S. Cl. 179—7.1 R **11 Claims**



1. Telecommunication line circuit comprising at least one line amplifier whose output is coupled to a telecommunication line conductor, and DC biasing means associated with said amplifier to apply thereto a DC bias signal of such a value that said amplifier cannot saturate when an AC metering signal is applied to it, wherein said bias signal (ΔV) is a bias voltage equal to the sum of a constant first voltage (VRG − VAG) and a variable second voltage (VE − VAG) varying with the envelope (VE) of said metering signal (MS), further comprising first (LOA0) and second (LOA1) operational line amplifiers whose outputs (TP, RG) are connected to respective conductors of said telecommunication line (LI0, LI1) and which are each fed between first (V+) and second (VEET) DC supply voltages, wherein said DC biasing means are able to apply such DC signals to inputs of said amplifiers that a DC voltage appears on each of said line conductors which differs from said first (V+) or second (VEET) DC supply voltage by said DC bias voltage (ΔV).

4,614,841

GEOGRAPHICALLY DISTRIBUTED MULTIPROCESSOR TIME-SHARED COMMUNICATION PROCESSING SYSTEM

Glenn R. Babecki, Lawrenceville; Frank Kaplan, Warren; Hueichi R. Liu, Mariboro; George F. MacLachlan, Tinton Falls; John F. McDonald, Watchung; John D. Palframan, Aberdeen; Martin J. Welt, Middletown, all of N.J.; Timothy A. Wendt, New York, N.Y., and Gregory S. Yates, Aberdeen, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 28, 1982, Ser. No. 393,111

Int. Cl.[4] H04Q *11/00*

U.S. Cl. 179—18 ES **20 Claims**

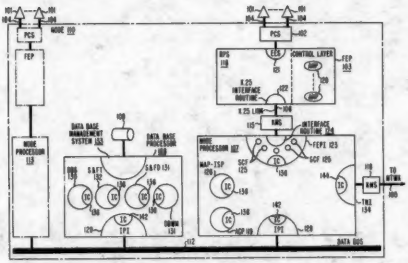
1. In a multiprocessor communication processing system for use in a communication or telephone network wherein in said system each processor supports a plurality of processes,

a communication system having communication connections between processes for transferring data in accordance with communication parameters, and

means invoked by each process requesting a connection to the other processes in the same and different processors

for selecting a connection therebetween and passing data defining communication parameters to the selected connection,

at least a portion of the communication parameter data being defined by the means invoked by the requesting process



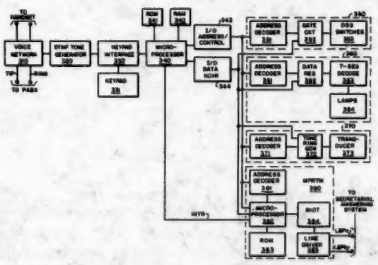
independent of the requesting process program code and at least a portion of the communication parameter data being supplied to the means invoked by the requesting process by means responsive to program code being executed by the requesting process.

4,614,842

SECRETARIAL TELEPHONE STATION WITH DISTRIBUTED PROCESSING FOR USE WITH A SECRETARIAL ANSWERING SYSTEM

Louis W. Smith, St. Petersburg, Fla., and John S. Csapo, Oakton, Va., assignors to GTE Communications Systems Corp., Northlake, Ill.

Filed Oct. 11, 1983, Ser. No. 540,462
Int. Cl.[4] H04M *1/50, 3/50, 3/58*
U.S. Cl. 179—27 FH 13 Claims



1. A secretarial telephone station for use with a telephone switching system including a switching center, a plurality of subscriber telephone stations connected to said switching center, each of which is operable as a calling or called subscriber station, and a secretarial answering system connected to said subscriber stations and operative to provide, in a predetermined signalling protocol, ringing, busy and idle detected messages each including a ringing, busy or idle code, respectively, and a code identifying a called subscriber station, said secretarial station comprising:

a first processing unit connected to said secretarial answering system and operative to receive and decode said ringing, busy and idle detected messages in said predetermined signalling protocol;

a second processing unit connected to said first processing unit and said switching center; and

a plurality of lamp and switch pairs connected to said second processing unit, each pair being associated with one of said subscriber stations;

said second processing unit being operative in response to said code identifying a called subscriber station and said decoded ringing, busy and idle detected messages to flash, light or darken, respectively, a lamp associated with said identified called subscriber station;

said second processing unit being further operative in response to operation of a switch to apply to said switching center a directed call pick up message including a directed call pick up code and a code identifying said associated subscriber station;

said second processing unit being further operative in response to subsequent operation of said switch to apply to said switching center a call transfer message, including a call transfer code and said code identifying said associated subscriber station, and further operative, in response to said subsequent switch operation, to provide a buzzing requested message including said code identifying said associated subscriber station;

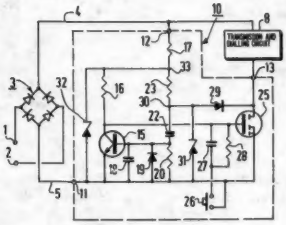
said first processing unit being operative to receive, format and transmit said buzzing requested message to said secretarial telephone answering system in said predetermined signalling protocol.

4,614,843

ARRANGEMENT FOR OPENING THE LOOP FOR A WELL-DEFINED TIME INTERVAL FROM A TELEPHONE SET

Jean-Pierre Coulmance, Osny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1984, Ser. No. 671,526
Claims priority, application France, Nov. 14, 1983, 83 18029
Int. Cl.[4] H04M *1/00*
U.S. Cl. 179—81 R 8 Claims



1. Telephone set apparatus for opening a subscriber loop for a predetermined time interval in response to actuation of a special key, comprising

bridge circuit means for furnishing a DC voltage between a reference potential terminal thereof and a supply terminal thereof;

a transmission and dialing circuit connected to said bridge circuit;

a monostable pulse circuit connected to said key, said bridge circuit and said transmission and dialing circuit, for opening said loop in response to said actuation of said key, said monostable pulse circuit comprising a junction transistor having a base, emitter and collector, an MOS field effect transistor having a grid directly connected to said collector, a source connected to said emitter and a drain connected to said transmitting and dialing circuit, means connecting said junction and MOS transistors to said bridge circuit so that said junction transistor is blocked, thereby switching said MOS field effect transistor to a highly conductive state, upon application of voltage to said bridge circuit, said monostable pulse circuit further comprising a timing capacitor connected between said base of said junction transistor and said drain of said MOS

field effect transistor and which is charged by said source when said MOS field effect transistor becomes non-conductive, and a charge limiting Zener diode connected in parallel with said timing capacitor for ending the charging thereof when the voltage across said capacitor substantially reaches the Zener voltage of said Zener diode;

said key having first and second terminals, the first terminal thereof being connected to said reference potential terminal of said bridge circuit means;

and said monostable pulse circuit further comprising means connecting said grid of said MOS field effect transistor to said second terminal of said key so that activation of said key switches said MOS field effect transistor to a substantially non-conducting blocked state, thereby disconnecting said transmitting and dialing circuit from said bridge circuit, and initiating charging of said timing capacitor.

4,614,844

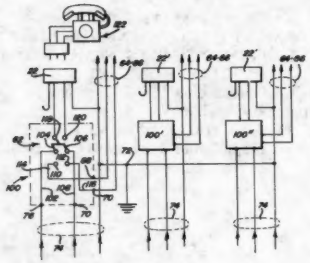
TELEPHONE SERVICE CHECKING TERMINAL

Budd E. Leeper, RFD #2, Box 100A, Oshkosh, Nebr. 69154

Filed Jul. 23, 1984, Ser. No. 633,250

Int. Cl.[4] H04M *9/00, 1/24*

U.S. Cl. 179—175.1 R **13 Claims**



1. In combination with a building having a subscriber telephone circuit to which at least one telephone instrument is coupled, and telephone utility service lines connected to said subscriber circuit, a service checking terminal assembly comprising a protective enclosure disposed externally of the building, at least one telephone jack mounted within the protective enclosure normally disconnected from the service lines, terminal means mounted within the enclosure to which the subscriber circuit and the utility service lines are permanently connected, and manually operable switch means mounted within the enclosure and connected to the terminal means for selectively coupling the utility service lines alternatively to the telephone jack and the subscriber circuit.

4,614,845

TELEPHONE HOOKSWITCH FLASHER

Peter Conlon, P.O. Box 311, Munster Hamlet, Ontario, Canada (K0A 3P0), assignor to Peter Conlon, Ontario, Canada

Filed Jul. 25, 1984, Ser. No. 634,277

Claims priority, application Canada, Nov. 22, 1983, 441701

Int. Cl.[4] H04M *1/06*

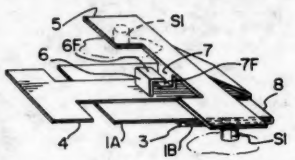
U.S. Cl. 179—159 **16 Claims**

5. A mechanical hookswitch flasher, comprising:

(a) a baseplate for retention on a telephone set adjacent a hookswitch,

(b) receptor means, resiliently hinged at an edge of the baseplate, for depressing the hookswitch, and

(c) operator means, resiliently hinged at said edge and disposed between the baseplate and said receptor means, for engaging and displacing said receptor means in response to said operator means being depressed a first amount, and subsequently disengaging said receptor means in response to being depressed a second amount greater than at least the first amount, whereby said receptor means depresses the hookswitch in response to being engaged and displaced, and releases the hookswitch in response to being subsequently disengaged.



4,614,846

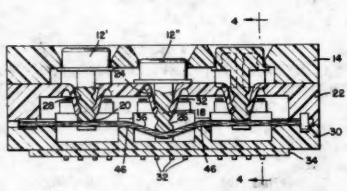
INTERLOCKED PUSH BUTTON SWITCH ASSEMBLY

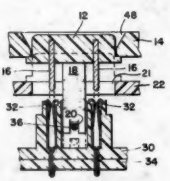
James Guercio, Glendale; Ronald A. Meyer, San Dimas, and Shiro Sakamoto, Claremont, all of Calif., assignors to Beckman Industrial Corporation, Brea, Calif.

Filed May 6, 1985, Ser. No. 730,640

Int. Cl.[4] H01H *9/26*

U.S. Cl. 200—5 E **11 Claims**





1. A push button switch assembly comprising:

a base having a plurality of stationary contact means thereon and including belt support means;

a belt disposed on said base following a predetermined path determined by said belt support means;

a cover including a plurality of engagement means, said engagement means being disposed opposite and inwardly of said stationary contact means and said cover being coupled to said base, and

a plurality of switch actuator means each including moveable contact means disposed for engaging a respective one of said stationary contact means when a respective one of said switch actuator means is activated and each switch actuator means having means for engaging said engagement means at a first position when said switch actuator means is deactivated and at a second position when said switch actuator means is activated and being coupled to said belt whereby when a first switch actuator means is activated to engage said engagement means at its second position, a previously activated switch actuator means is urged by said belt to engage said engagement means at its first position.

4,614,847

MULTI-DIRECTION OPERATION DEVICE

Yasuo Sasao, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Jun. 14, 1985, Ser. No. 745,400
Claims priority, application Japan, Jun. 14, 1984, 59-88610[U]
Int. Cl.[4] H01H *25/04*
U.S. Cl. 200—6 A 3 Claims

1. A multi-direction joystick device comprising:

an upper casing provided with a central aperture for receiving an operation shaft therethrough and stopper portions defined on a lower surface thereof;

a lower casing having a floor provided with a central pivot portion and side walls on which at least two opposing rotation-preventing members are fixed;

an operation shaft received through said aperture in said upper casing and having one end thereof supported on said central pivot portion of said lower casing and its other end extending from said upper casing so as to be pivotable in any direction;

a plurality of resilient switch-pushing arms mounted on said operation shaft radially spaced apart and extending toward said side walls between said upper casing and said floor of said lower casing, and a corresponding plurality of contact switch assemblies mounted in position to be depressed by the resilient force of respective switch-pushing arms when said operation shaft is pivotally inclined in respective directions; and

a plurality of resilient returning arms mounted on said operation shaft radially spaced apart and extending toward said side walls between said upper casing and said floor of said lower casing, said stopper portions on said lower surface of said upper casing being engaged by said returning arms when said operation shaft is pivotally inclined in respective directions so as to restore said operation shaft to an upright position by the resilient force of said returning arms, at least two opposing ones of said returning arms having engaging portions for engaging said at least two rotation-preventing members to prevent axial rotation of said operation shaft;

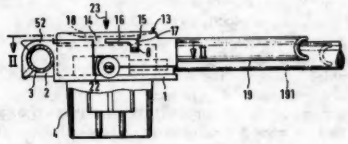
wherein said returning arms and said switch-pushing arms are separated from each other and have different resiliency characteristics such that a lesser resilient force can be applied to said switch assemblies by said switch-pushing arms than that applied on said stopper portions by said returning arms when said operation shaft is inclined.

4,614,848

SWITCH ARRANGEMENT WITH CLOSING LOCK

Siegfried Schulte, and Manfred Böing, both of Lüdenscheid, Fed. Rep. of Germany, assignors to Firma Schulte-Elektrotechnik GmbH & Co., Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,386
Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417724; May 12, 1984, 3417725
Int. Cl.[4] H01H *9/06, 3/20*
U.S. Cl. 200—61.85 15 Claims



1. A switch arrangement comprising:

(a) a cover including a cylindrical wall;

(b) a casing including a cylinder-shaped ring wall;

(c) the cylindrical wall of the cover circumferentially overlaps the ring wall of the casing for defining an enclosure;

(d) a switch disposed within the enclosure and including an actuation button;

(e) means carried by the cover and casing for defining a lock;

(f) the cover being axially movable with respect to the casing for disposing the cover between a first position wherein the lock prevents rotation of the cover, and a second position wherein the cover is permitted to rotate with respect to the casing for actuation of the switch;

(g) spring means disposed within the casing for pretensioning the cover into the first position;

(h) the top surface of the cover defining an unlocking button for moving the cover axially into the second position; and

(i) a switch lever integrally molded to the cover for rotating the cover with respect to the casing for engaging the actuation button when the cover is disposed in the second position.

3. The switch arrangement of claim 1 wherein the actuation button includes a profile curve, the cylindrical wall of the cover includes a profile nose, and the profile nose engages the profile curve when the cover is rotated with respect to the casing.

13. The switch arrangement of claim 1 wherein the cylindrical wall of the cover includes a profile nose and the actuation button includes a roller engageable by the profile nose when the cover is rotated with respect to the casing.

4,614,849

ELECTRICAL PRESSURE SWITCH

Ellsworth S. Miller, Mt. Clemens, Mich., assignor to Lectron Products, Inc., Rochester, Mich.

Filed Apr. 18, 1985, Ser. No. 724,818
Int. Cl.[4] H01H *35/34*
U.S. Cl. 200—81 R 23 Claims

1. In an electrical pressure switch,

a pair of fixed electrical terminals;

means electrically insulating said terminals from each other;

means defining a pair of annular seats each associated with a respective one of said terminals and in opposed relation and spaced axially apart, one of said seats being of electrically conductive material and the other of said seats being of electrically insulative material;

means electrically connecting one of said seats to one of said terminals;

cover means electrically insulating the other of said seats from the other of said terminals;

port means in one of said terminals opening through the seat

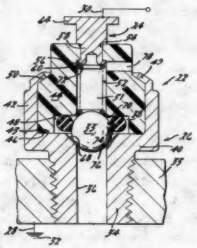
associated therewith and adapted to be connected to and to communicate with a source of predetermined relatively low and predetermined relatively high fluid pressure;

an electrical contact member movable between and engageable with said seats and having a portion thereof provided with an external annular surface tapered toward and facing the terminal electrically connected to one of said seats;

means defining an annular shoulder disposed radially outwardly of said electrical contact member; and

a pair of resilient members engaging said contact member, one of said resilient members being of electrically conductive material and being interposed between and in engagement with said contact member and one of said terminals and providing an electrical circuit therebetween, the other of said resilient members being in the form of an O-ring in pressed sealing engagement simultaneously with said shoulder and with the tapered surface of said contact member;

said resilient members mutually cooperating to urge said contact member normally in the direction of one of said



terminals and operative with a predetermined relatively low fluid pressure in said port means to hold said contact member against the seat associated with said other terminal;

said predetermined relatively high fluid pressure in said port means being operative to move said contact member toward said one terminal and against its associated seat against the combined actions of said resilient members;

whereby an electrical circuit is established between said terminals through said one resilient member and said contact member in one seated position of the latter;

whereby the electrical circuit between said terminals is broken in the other seated position of said contact member; and

whereby said other resilient member maintains a constant sealing engagement simultaneously with said contact member and with said shoulder to maintain fluid pressure of the port side of said contact member in both seated positions of said contact member and during movement of said contact member from one seat to the other.

4,614,850

VACUUM SWITCH FOR THE LOW-VOLTAGE RANGE, ESPECIALLY A LOW-VOLTAGE CONTACTOR

Wilfried Kuhl, Grosschwarzenlohe, and Edwin Gemmel, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

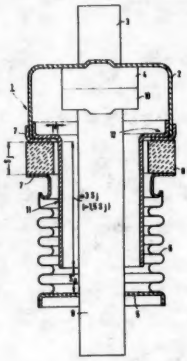
Filed Nov. 30, 1984, Ser. No. 676,825

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1983, 3343918

Int. Cl.⁴ H01H *33/66*

U.S. Cl. 200—144 B **8 Claims**

1. A vacuum switch for low-voltages comprising support means, a vacuum switching tube disposed on said support means defining a vacuum switching chamber and first contact means rigidly disposed therein, second contact means movable with respect to the first contact means in said chamber, said second contact means being operable by operating means extending into said switching chamber, the vacuum switching tube having insulating means coupling said switching tube and said support means, said insulating means surrounded on a side facing the vacuum in said switching chamber at least partially by shielding means, the shielding means comprising hollow cylinder means disposed concentrically about said operating



means, said insulating means comprising insulating ring means disposed concentrically about said shielding means, the axial length of said shielding means being at least 1.5 times the length of said insulating ring means, and further comprising spring bellows means coupling said insulating ring means and said support means, the outer circumference of the shielding means being radially spaced from the inside circumference of said spring bellows means by a small distance.

4,614,851

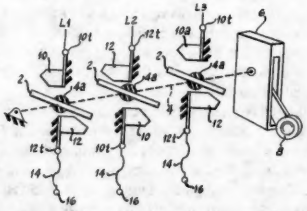
CONTACT SEQUENCING ARRANGEMENT FOR ROTARY DOUBLE BREAK SWITCH

Peter J. Theisen, West Bend; James J. Rusenko, Milwaukee, and Frank Navratil, Jr., Thiensville, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 21, 1985, Ser. No. 704,111

Int. Cl.⁴ H01H *33/14*

U.S. Cl. 200—146 R **5 Claims**



1. In a multi-pole double break electric switch having a plurality of bridging contacts disposed in spaced side-by-side relation along a rotational axis and rotatable in unison for movement into and out of bridging engagement at opposite ends thereof with respective pairs of stationary contacts associated with said bridging contacts, each said bridging contact and respective associated pair of stationary contacts defining a switch pole, said contacts of each said pair being arranged to provide one stationary contact which is engaged by said respective bridging contact before the other stationary contact of said pair, the improvement comprising alternately arranging said pairs of stationary contacts for adjacent switch poles such

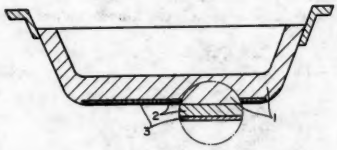
that respective said one contacts of adjacent contact pairs are disposed at opposite ends of respective bridging contacts.

4,614,852

ELECTROMAGNETIC INDUCTION HEATING COOKING UTENSIL

Kenyo Matsushita, and Hiroshi Ishida, both of Ihara, Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Jul. 30, 1985, Ser. No. 760,586
Int. Cl.[4] A47J *27/00*; B65D *25/34*; H05B *6/12*
U.S. Cl. 219—10.49 R **3 Claims**



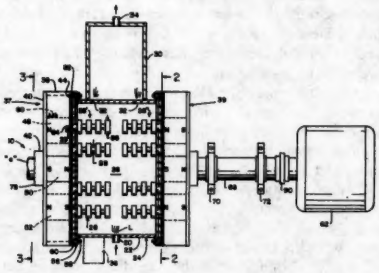
1. A cooking utensil for heating by electromagnetic induction comprising a vessel made of a material selected from the group consisting of aluminum and an aluminum alloy, said vessel having at its bottom a spray coated layer of a magnetic material having a thickness of about 0.4–0.7 mm and a spray coated layer of a material selected from the group consisting of aluminum and an aluminum alloy covering said layer of a magnetic material and having a thickness from about 0.1 up to not more than 1.0 mm.

4,614,853

PERMANENT MAGNET STEAM GENERATOR

Frank Gerard, and Frank J. Gerard, both of 12020 Brooknoll Rd., Kingsville, Md. 21087

Filed Oct. 15, 1985, Ser. No. 787,035
Int. Cl.[4] H05B *6/10*
U.S. Cl. 219—10.51 **1 Claim**



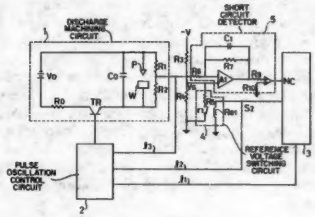
1. In a system for magnetic heating of a fluid by motor rotation of a permanent magnet rotor adjacent an assembly of ferro-magnetic condensing plate and of copper heat absorber plate with protrusions through the ferro-magnetic condensing plate into an enclosure with said fluid therein and having fluid inlet and fluid outlet, said assembly having a first shaft and a second shaft coaxially spaced therefrom, a respective said motor connected to the outer end of each shaft, and a respective said permanent magnet rotor connected to the inner end of each shaft, adjacent a said heat absorber plate, the improvement comprising: the enclosure including a steel boiler with a first said ferro-magnetic condensing plate closing off a first end thereof and a second said ferro-magnetic condensing plate closing off a second end thereof, a said copper heat absorbing plate affixed on each ferro-magnetic plate; means, free of pockets, for promoting turbulent flow of said fluid with uniformly good heat transfer including said protrusion being a plurality of heat sinks, each heat sink of said plurality of heat sinks comprising an integral elongate member with a plurality of alternately large diameter and smaller diameter portions regularly spaced therealong, said elongate members through the first said ferro-magnetic condensing plate being coaxially aligned with said elongate members through the second said ferro-magnetic condensing plate, and said elongate members through the first ferro-magnetic condensing plate being spaced apart from the elongate members through the second condensing plate.

4,614,854

WIRE EDM CONTROL CIRCUIT FOR ROUGH AND FINISHED MACHINING

Haruki Obara, Sagamihara, and Shunzo Izumiya, Hachiouji, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP83/00407, § 371 Date May 22, 1984, § 102(e) Date May 22, 1984, PCT Pub. No. WO84/01915, PCT Pub. Date May 24, 1984
PCT Filed Nov. 11, 1983, Ser. No. 618,394
Claims priority, application Japan, Nov. 15, 1982, 57-199043
Int. Cl.[4] B23H *1/02*
U.S. Cl. 219—69 C **9 Claims**



1. An electric discharge machining control circuit comprising:

a pulse oscillation control circuit means for generating a pulse stream;

an electric discharge machining circuit having a variable circuit constant, operatively connected to said pulse oscillation control circuit means, including a capacitor, a switching means operatively connected to said capacitor which switching means is turned on and off in response to said pulse stream for said pulse oscillation control circuit means for applying a discharge current between a wire electrode and a workpiece in accordance with the variable cicuit constant;

a short-circuit detector means, operatively connected to said electric discharge machining circuit, for comparing a machining voltage between the wire electrode and the workpiece with a reference voltage and for detecting a short circuit between the wire electrode and the workpiece;

gate means, operatively connected to said pulse oscillation control circuit means, for inhibiting generation of said pulse stream in response to said short-circuit detector detecting a short-circuit;

receiving means for receiving a second cut instruction;

average machining voltage switching means, operatively connected to said receiving means, for decreasing an average machining voltage applied between the wire electrode and the workpiece in response to said second cut instruction, by changing a value of said variable circuit constant from that employed during rough machining;

reference voltage switching means, operatively connected to said receiving means, for generating the reference voltage applied to said short-circuit detector means, and

for decreasing the reference voltage applied to the short-circuit detector means in response to said second cut instruction from a value applied during rough machining to a lower value such that errors in said detecting of a short circuit are prevented.

4,614,855

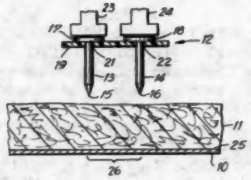
RESISTANCE WELD SECUREMENT DEVICE

Milton Hinden, Duro Dyne Corporation, Rte. #110, Farmingdale, N.Y. 11735

Filed May 9, 1984, Ser. No. 608,355

Int. Cl.[4] B23K *11/32*

U.S. Cl. 219—98 **2 Claims**



1. A resistance weld attachment apparatus adapted to be attached to a ferrous substrate through an intervening penetrable insulating blanket comprising, in combination, a first ferrous pin member, a second non-ferrous pin member formed of a metal having higher electrical conductivity than said first pin member, said members including elongate shank portions having sharpened tip portions at one end and enlarged head portions at the other end, a spacer member connected to said metallic members in the area between said head and shank portions and supporting the same in spaced parallel alignment with said head portions and said tip portions respectively in coplanar orientation, said spacer member including insulating members are mounted in electrical isolation one from the other.

4,614,856

HOT-WIRE TIG WELDING APPARATUS

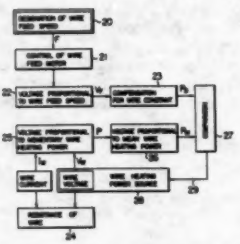
Katsuyoshi Hori; Takeshi Kagawa; Kazuki Kusano, and Toshiaki Takuwa, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,168

Claims priority, application Japan, Oct. 7, 1983, 58-186998

Int. Cl.[4] B23K *9/10*

U.S. Cl. 219—130.21 **9 Claims**



1. In a hot-wire TIG welding apparatus, the improvement comprising:

hot-wire feed speed control means for controlling the speed of feed of a hot-wire, said hot-wire feed speed control means providing a reference voltage value corresponding to the feed speed of the hot-wire;

heating power control means for controlling the electric power for heating the hot-wire, said heating power control means including detector means for detecting wire-heating instantaneous electric power and providing an actual voltage value corresponding to the instantaneous wire-heating power; and

change means responsive to at least a change in said reference voltage value with respect to said actual voltage value for controlling said heating power control means in accordance therewith.

4,614,857

SOLENOID ENERGIZING CIRCUIT FOR AN ELECTRIC ARC WELDING TOOL

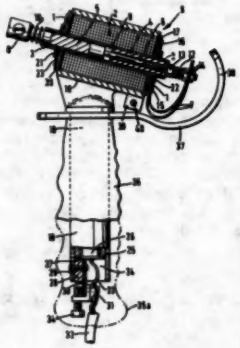
Stephen Webb, 73 Maltravers St., Arundel, West Sussex BN18 9BQ, and Roy Neville, The Pebbles, Green La., Ellisfield, near Basingstoke, Hampshire RG25 2NS, both of England

Filed Feb. 8, 1985, Ser. No. 699,471

Claims priority, application United Kingdom, Jan. 29, 1985, 8502192

Int. Cl.[4] B23K *9/30*

U.S. Cl. 219—136 **8 Claims**



8. An improvement in a welding tool having an electromagnetic solenoid means arranged to retract an electrode holder in opposition to a restoring means which urges the holder towards the workpiece, the solenoid means having an energising circuit which is completed through the electrode and workpiece by mutual contact of these whereby the electrode will be retracted to strike an arc and break the circuit, the restoring means returning the electrode to make contact with the workpiece, wherein as a first improvement the solenoid includes a core of magnetic material with a first part fixed to the solenoid coil structure and a second part fixed to the electrode holder and movable with respect to the solenoid, the first and second parts being spaced longitudinally by a air gap of variable length, and wherein as a second improvement a diode is included in series with the current feed from the said energising circuit, wherein the solenoid assembly is mounted in a housing integrally connected with a handle, the diode being mounted within the handle, one pole of the diode being in electrical contact with one end of the solenoid winding, the other pole of the diode being connected to a terminal to which a cable is secured serving to feed current to the tool, the other end of the solenoid winding being in electrical contact with one end of a flexible electrical connection, the other end of said connection being secured to the second core part which is fixed to the electrode holder, and wherein the housing is cylindrical the solenoid coil being located within the housing, the said coil having a central hollow core protruding from each end of the housing, the core containing a fixed first core part at one end, said core part having a central boring through which a studding passes with clearance, said studding being integral with one end of the second movable core part at the other end of the hollow core, the second core part being spaced from the

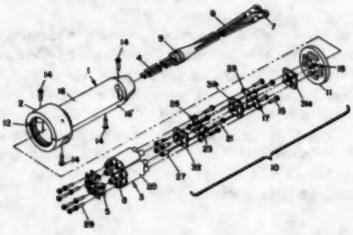
first by an air gap, the second core part having at its other end the electrode holder, the solenoid coil being retained in the housing by metal plates positioned over the hollow core and each in abutment with a respective end face of the housing and coil, the metal plates each being secured by a spring clip means each engaging and gripping the hollow core and pressing against the metal plates through an interposed insulating washer so that the hollow core is electrically insulated from the housing.

4,614,858

ELECTRIC TOOL FOR DESOLDERING SURFACE MOUNTED DEVICES

Harold W. Vial, Newman Lake, Wash., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Mar. 28, 1985, Ser. No. 717,612
Int. Cl.[4] H05B *1/00*; B23K *3/00*
U.S. Cl. 219—230 **7 Claims**



1. A desoldering tool for removing soldered electronic components from printed circuit boards or the like, said desoldering tool comprising:

a plurality of shaped heater bars disposed in spaced apart, opposed relationship so as to grasp the component to be removed, said heater bars for contacting solder terminations to be desoldered and heating the solder to its melting temperature, said heater bars being composed of an electrically conductive material having a high electrical resistivity;

power supply means adapted to be coupled to the heater bars for supplying electrical current to the heater bars;

cantilever spring means urging said heater bars against said solder terminations and retaining the component for physical removal;

coupling means electricaly coupling the power supply means to the heater bars and fixedly attaching said heater bars to said cantilever spring means, said heater bars being removably attached to the coupling means; and

a handle having an enlarged end, said enlarged end including mounting means, said mounting means disposed within said enlarged end, said cantilever spring means being fixedly mounted on said mounting means, said heater bars being disposed adjacent said enlarged end, said handle providing mechanical support and electrical and thermal insulation.

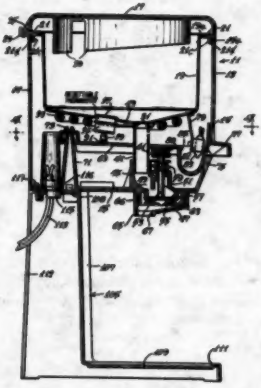
4,614,859

LIQUID HEATING AND DISPENSING APPLIANCE

Jacobus J. Beckering, Willowbrook; Alvin P. Lehnerd, Hinsdale, and Walter B. Zoberis, Oak Lawn, all of Ill., assignors to John Zink Company, Tulsa, Okla.

Filed Nov. 16, 1984, Ser. No. 672,306
Int. Cl.[4] H05B *1/02*; F24H *1/18*; B67D *5/62*
U.S. Cl. 219—312 **9 Claims**

1. An improved electric water heating appliance comprising a housing enclosing a water heating reservoir and valve means controlling the dispensing of water from said reservoir, said reservoir having an electric heating element mounted in good heat exchange relation therewith for heating the water therein, support means for mounting said housing over a liquid receiving vessel, said housing having a dispensing passageway with an outlet from said reservoir connected to said passageway, said valve means including a valve member movably mounted in said passageway to selectively seal said passageway, a thermostatic normally open, manually closable switch connected in series with said heating element and mounted in said housing to respond to the temperature of said reservoir, a manually operable lever mounted in said housing for selectively actuating said valve member and said thermostatic switch, said lever



having one end extending exteriorly of said housing for manual operation and the other end pivoted within said housing, said lever being biased to a first rest position in which said valve member is in sealed engagement with said passageway and said lever out of actuating engagement with said thermostat, said lever being pivotal in one direction to a second position in which it moves said valve member to its open position in which liquid flows through said passageway, said lever being pivotal in a direction opposite to said one direction to a third position wherein it closes said thermostatic switch.

4,614,860

PROCESS AND DEVICE FOR THE ANTICIPATORY SELF-ADAPTING REGULATION OF A PROCEDURE

Michel Kativols, Biviers, France, assignor to Societe Kativols, France

Filed Mar. 27, 1985, Ser. No. 716,419
Claims priority, application France, Mar. 30, 1984, 84 05339
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—492 **12 Claims**

1. A process for the temperature regulation of an element heated by means of an electrically controllable heating source, said process comprising the following steps of:

detecting the temperature σ of said element;

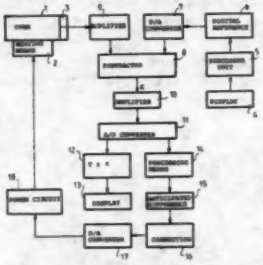
comparing the detected temperature with a reference value established by a program which defines the law of variation of the desired temperature;

obtaining an error signal which is a function of the difference between the detected temperature and said reference value;

determining a plurality of anticipated time periods which correspond respectively to successive effective time periods;

determining for each of said anticipated time periods, an anticipated temperature σ_a at the end of this anticipated time period, said anticipated temperature σ_a being representative of the temperature of the element at the end of

this anticipated time period, if the error signal was applied to said controllable heating source without correction;



determining an anticipated reference slope

$$\frac{d\sigma_a}{dt}$$

obtaining for each of said anticipated time periods a power correction signal to be applied on said difference signal, said power correction signal being obtained by computing a formula of the type

$$C_o = a\sigma_a + \beta\frac{d\sigma_a}{dt}$$

in which expression α is a coefficient proportional to the resistance of the element and β is a coefficient proportional to the thermal capacity of the element;

applying during each of said effective time periods, on said error signal the power correction signal computed for the anticipated time period which corresponds to said effective time period;

applying said control signal to said controllable heating source.

4,614,861

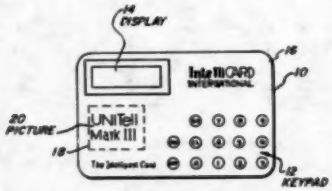
UNITARY, SELF-CONTAINED CARD VERIFICATION AND VALIDATION SYSTEM AND METHOD

Leonidas P. Pavlov, and Nabil M. Aba-Jbara, both of Colorado Springs, Colo., assignors to Intellicard International, Inc., Colorado Springs, Colo.

Filed Nov. 15, 1984, Ser. No. 671,748

Int. Cl.[4] G06K 5/00

U.S. Cl. 235—380 **27 Claims**



1. A unitary, self-contained card capable of storing and generating information independently of systems external to said card to verify proper use of said card comprising:

data entry means for entering a personal identification number into said card;

electronic memory means for storing a predetermined personal identification number associated with said card and an encryption algorithm (N); data processing means comprising:

means for comparing said personal identification number entered through said data entry means with said predetermined personal identification number stored in said electronic memory means to generate a PIN validation signal upon favorable comparison of said personal identification number entered through said data entry means and said predetermined personal identification number stored in said electronic memory means;

means for generating a transaction key number (KLM) which is generated in response to said PIN validation signal and which is different each time said PIN validation signal is generated;

means for generating an algorithmic code number (XYZ) from said transaction key number (KLM) in accordance with said encryption algorithm (N);

means for generating a transaction identification code number (TIC) from said transaction key number (KLM) and said algorithmic code number (XYZ);

means for displaying on said card said transaction identification code (TIC) so that the validity of said use of said card can be verified by knowing said encryption algorithm (N) and by identifying said transaction key number (KLM) and said algorithmic code number (XYZ) in said transaction identification code (TIC) and verifying said algorithmic code number (XYZ) by deriving said algorithmic code number (XYZ) from said transaction key number (KLM) and said encryption algorithm (N).

4,614,862

ELECTRICALLY ACTUATABLE LOCKING DEVICE

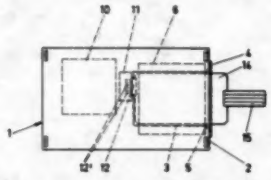
Armin Fisermann, Velbert, Fed. Rep. of Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,023

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326266

Int. Cl.[4] G06K 7/01

U.S. Cl. 235—382.5 **8 Claims**



1. An electrically actuatable locking system comprising

a housing formed with an insertion channel for receiving a coded card-shaped key element,

at least one memory means for reading a code of the key element arranged in said housing for actuating a lock of the locking system,

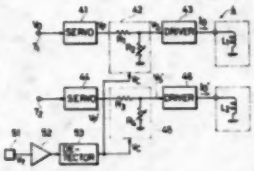
a portable printer including means comprising an insertion element insertable into the insertion channel for enabling the printer to read the information in the memory, said insertion element is shaped like said key element.

4,614,863

OPTICAL SIGNAL PROCESSING SYSTEM WITH VARIABLE GAIN STAGE OF SERVO SYSTEM CONTROLLED BY OUTPUT OF ENVIRONMENTAL CONDITION SENSOR

Tetsuo Sato, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 13, 1984, Ser. No. 650,173
Claims priority, application Japan, Oct. 31, 1983, 58-202596
Int. Cl.[4] G01J 1/20
U.S. Cl. 250—201 10 Claims



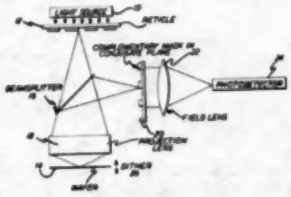
1. An optical signal processing system, comprising:
(a) a light source for projecting light onto the surface of a recording medium on which data is recorded;
(b) control means for controlling the focusing and position of said light on the surface of said recording medium; and
(c) signal generator means for generating signals proportional to an environmental condition which is likely to cause vibration of said recording medium and for applying said signals to said control means to control the sensitivity of the operation of said control means.

4,614,864

APPARATUS FOR DETECTING DEFOCUS

Frederick Y. Wu, Cos Cob, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 29, 1984, Ser. No. 614,360
Int. Cl.[4] G01J 1/20
U.S. Cl. 250—201 3 Claims



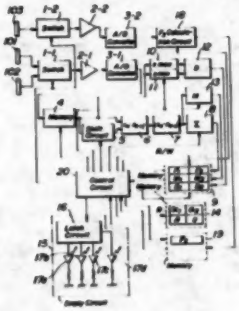
1. Apparatus for detecting defocus comprising, in combination:
means for mounting a reticle;
means for illuminating said reticle;
a beam splitter;
projection lens means;
means for mounting a wafer at a primary image plane of said projection lens means;
said beam splitter and said projection lens means being arranged to project an image of said reticle on said wafer;
a mask complementary to said reticle being mounted in a secondary image plane;
said beam splitter and said projection lens means being arranged to reimage light reflected from said wafer on said complementary mask; and
detector means mounted to collect light transmitted by said complementary mask.

4,614,865

METHOD OF DETECTING A FOCUS CONDITION OF AN IMAGING OPTICAL SYSTEM BY IMAGE SHARPNESS AND LATERAL SHIFT TECHNIQUES

Asao Hayashi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,479
Claims priority, application Japan, Nov. 22, 1982, 57-205025
The portion of the term of this patent subsequent to Jan. 8, 2002, has been disclaimed.
Int. Cl.[4] G01V 1/20
U.S. Cl. 250—201 13 Claims



1. A method of detecting a focus condition of an imaging optical system by combining an image sharpness detection method for detecting in-focus condition by obtaining an evaluation value representing sharpness of images projected upon a photoelectric detecting means including at least two arrays each comprising a plurality of light receiving elements, each element producing a photoelectrically converted output, and an image lateral shift detection method for detecting in-focus condition by a positional relation between an image projected upon a photoelectric detecting means including at least two arrays comprising a plurality of light receiving elements, each element producing a photoelectrically converted output, by light flux transmitted through a first part of an exit pupil of an optical lens and an image projected upon the photoelectric detecting means by light flux transmitted through a second part of the exit pupil of the optical lens, comprising the steps of:
calculating an evaluation function representing the state of density distribution of the image projected upon the photoelectric detecting means; and
selecting either the image sharpness detection method or the image lateral shift detection method in accordance with the calculated evaluation function, thereby detecting the in-focus condition.

4,614,866

PULSED LIGHT DETECTION CIRCUIT

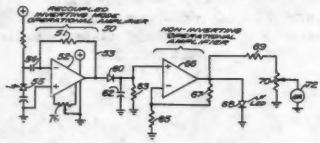
Saul Liss; Bernard S. Liss, both of Glen Rock; Sam Krakower, Elmwood Park, and Ilya Feygin, Westfield, all of N.J., assignors to Pain Suppression Labs, Inc., Elmwood Park, N.J.

Division of Ser. No. 586,560, Mar. 6, 1984. This application Jun. 4, 1985, Ser. No. 741,102
Int. Cl.[4] H01J 40/14
U.S. Cl. 250—214 A 5 Claims

1. A circuit for detecting pulsed radiant energy of a predetermined wavelength comprising:
a transducer for detecting radiant energy, said transducer being responsive to the predetermined wavelength of the radiant energy desired;
an inverting mode operational amplifier having an AC coupled input stage and an output, the input stage being coupled to said transducer;
an amplitude signal demodulator forming a peak detector

and having an input connected to the output of said inverting operating amplifier and an output;

a non-inverting operational amplifier having an input connected to the output of said demodulator and an output; and



indicator means coupled to the output of said non-inverting amplifier to be activated by the output therefrom to thereby indicate that pulsed energy has been detected.

4,614,867

SHEET SENSING APPARATUS WITH PHOTOELECTRICALLY DETECTED RESILIENTLY MOUNTED NIP ROLLER

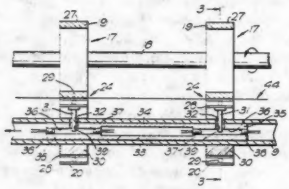
Martin Lane, Portsmouth, England, assignor to De La Rue Systems Limited, London, England

Continuation-in-part of Ser. No. 625,786, Jun. 28, 1984. This application Aug. 6, 1984, Ser. No. 625,788

Claims priority, application United Kingdom, Jul. 1, 1983, 8317896

Int. Cl.[4] G01N *9/04*

U.S. Cl. 250—223 R **11 Claims**



1. Sheet sensing apparatus comprising a shaft; at least one roller assembly; roller assembly mounting means including a resilient portion, said at least one roller assembly being mounted on said shaft by said resilient portion; guide means defining a guide surface, said roller assembly cooperating with said guide surface to define a nip therebetween; sensing means within said shaft adapted to sense deflection of said resilient portion relatively to said shaft in response to the passage of one or more sheets through said nip between said roller assembly and said guide surface; and monitoring means connected to said sensing means for monitoring the sensed deflections of said resilient portion.

4,614,868

FIBER OPTIC SEAM TRACKING APPARATUS

Louis G. Alster, Morton, Ill., assignor to Caterpillar Industrial Inc., Peoria, Ill.

Filed Oct. 12, 1984, Ser. No. 660,354

Int. Cl.[4] H01J *5/16, 40/14*

U.S. Cl. 250—227 **7 Claims**

1. An apparatus movable in a first direction along a plane "P" optically detecting anomalies on the surface of a workpiece, comprising:

first and second fiber optic bundles, each having first and second ends;

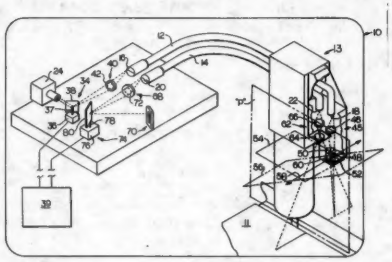
a projected source of light;

first means for receiving said projected light and altering the path of said light across said first end of said first fiber optic bundle;

second means for imaging said light onto substantially a single fiber of said first fiber optic bundle;

third means for receiving said light from said second end of said first fiber optic bundle, imaging said light relative to said workpiece surface, and establishing a spot of light;

fourth means for receiving reflected light from said spot of



light and imaging said light onto substantially a single fiber of said second fiber optic bundle;

fifth means for receiving said light from said first end of said second fiber optic bundle and imaging said light; and,

sixth means for receiving said light from said fifth means and delivering an electrical signal in response to the position of said imaged light.

4,614,869

APPARATUS FOR DETECTING ANGLE AND ANGULAR VELOCITY OF ROTATION MEMBER AND METHOD OF ASSEMBLING IT

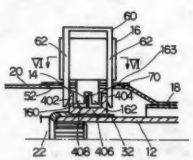
Shigeru Hoshino, and Hiroshi Miyata, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jan. 27, 1984, Ser. No. 574,463

Claims priority, application Japan, Jan. 29, 1983, 58-11958[U]

Int. Cl.[4] G01D *5/34*

U.S. Cl. 250—231 SE **10 Claims**



1. An apparatus for detecting an angle and an angular velocity of a rotating member, comprising:

a holder member circumferentially secured onto an outer peripheral portion of the rotating member, the holder member including a first radial projection and a second radial projection, said second radial projection being parallel to said first radial projection, a first interval being defined between said first radial and said second radial projections;

a disc mounted on and rotatable with the holder member, the disc having a plurality of holes equidistant and concentrically located from the center of the disc and the disc extending radially outward from the rotating member, the disc being centrally located between the first and second radial projections of the holder member, whereby a lower half interval is defined between the first radial projection and the disc, and an upper half interval is defined between the second radial projection and the disc;

a fixed member that does not rotate with the rotating member; and

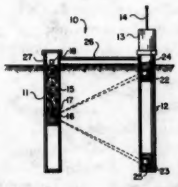
a sensor mounted on the fixed member and having a first extending portion housing a luminescent means and a second extending portion housing a light receiving means, said first extending portion and said second extending portion located on axially opposite sides of said disc, said first extending portion and said second extending portion being radially longer than said disc extending radially outward and said luminescent means and said light receiving means are axially aligned through said disc, said first and second extending portions being inserted respectively into the lower and upper half intervals with clearances being defined between the disc and the first and second radial projections, said first extending portion having a lower surface and an upper surface with the upper surface being closer to said disc than the lower surface, said second extending portion having a lower and upper surface with the lower surface being closer to the disc than the upper surface, a length defined between the lower surfaces of the first and second extending portions of the sensor which is greater than the upper half interval and a length being defined between the upper surfaces of the first and second extending portions of the sensor which is greater than the lower half interval, whereby when the first or second extending portions of the sensor are in contact with the first or second radial projections of the holder member, the first or second extending portions of the sensor do not contact the disc.

4,614,870

MINIATURE ISOTOPIC SOIL MOISTURE GAGE

Roderick G. Morrison, Carlsbad, Calif., assignor to Sunburst Energy Systems, Inc., San Marcos, Calif.

Filed Dec. 5, 1983, Ser. No. 558,378
Int. Cl.[4] G01N *23/08*
U.S. Cl. 250—358.1 **7 Claims**



1. A gage for monitoring the moisture content in a material, said gage comprising:

means for compensating for any variables in radiation attenuation coefficient in the material being monitored, said means comprising

a reference column of the material in a calibrated state of moisture content;

a source of radiation of sufficiently small size so as to possess no known substantial biological hazards, said source being positioned at one end of said reference column of material;

reference detector means spaced from said radiation source by the length of said reference column of material and producing a series of output pulses proportional in number to the detected radiation intensity from said source through the reference column of material;

measurement detector means spaced a predetermined distance from said source, substantially all of the space between said source and said measurement detector means being occupied by the material being monitored, said measurement detector means producing a series of output pulses proportional to the detected radiation intensity from said source through the material being monitored;

computation means connected to both said detector means for counting the output pulses from said reference detector means and said measurement detector means, said counting means including comparator means and means for stopping the measurement detector means count when the reference detector means count reaches a predetermined value;

means for converting the count difference between said reference and measurement detector means outputs to a signal representing moisture content of the material being monitored; and

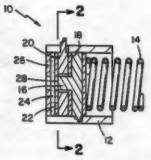
means for providing an output signal representing the moisture content of the monitored material, said output signal being adapted to be coupled to indicator means.

4,614,871

PHOTODIODE

John N. Driscoll, 25 Geraldine Dr., Wellesley Hills, Mass. 02181

Filed Oct. 31, 1984, Ser. No. 666,990
Int. Cl.[4] H01J *40/16*; G01N *21/33*
U.S. Cl. 250—372 **13 Claims**



13. A gas chromatography detector comprising a source of far-uv radiation in the 100 to 140 nanometer wavelength range, a sample cell through which gases flow and said radiation passes, a photodiode device sufficient for detecting the far-uv radiation emerging from said cell, and means for positioning said photodiode device so that radiation emerging from said cell passes through said photodiode device, said photodiode device comprising

a radiation entry zone;

a photocathode positioned at one end of said zone in the path of far-uv radiation entering from the other end and passing through said zone; and

an anode positioned to collect electrons emitted by said photocathode; characterized in that:

said radiation entry zone is neither evacuated nor filled with inert gas;

the distance between said other end of said entry zone and said photocathode is sufficiently short that absorption of said radiation within said zone is no greater than 90% in the presence of oxygen-containing atmospheric gases; and

the spacing between said photocathode and said anode is sufficiently small to allow the creation of field strength adequate for operation of said photodiode device with atmospheric gases filling said spacing.

4,614,872

CHARGED PARTICLE DEFLECTION

Anthony W. Sloman, Cambridge, England, assignor to Cambridge Instruments Limited, Cambridge, England

Filed May 1, 1984, Ser. No. 605,831
Claims priority, application United Kingdom, May 5, 1983, 8312291
Int. Cl.[4] G21K *1/08*; H01J *3/14*
U.S. Cl. 250—396 R **2 Claims**

1. A system for deflecting energetic charged particles comprising:

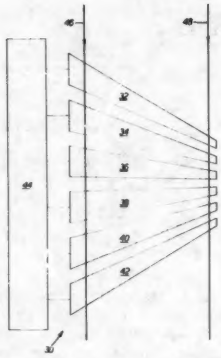
a travelling wave deflecting structure including a plurality of pairs of elongate plate elements, one said plate element of each pair being in a first plane and the other said plate element of each pair being in a second plane parallel to said first plane,

a delay line,

power supply means for applying a signal to said delay line,

one plate element of each pair being connected to a respective point on said delay line, the other plate element of each said pair being earthed,

the plurality of elements tapering in a longitudinal direction and the shaping of said elements and the points at which said elements are connected to said delay line being such that electrostatic waves propagate between said planes, the velocity of an electrostatic wave in a straight line traversing all of the pairs of plate elements varying in dependence on the position of the straight line in the longitudinal direction of the plate elements whereby a charged particle which travels in any said straight line



path between said planes at the same velocity as the wave propagating in that straight line is deflected in a blanking manner perpendicular to said planes, and

magnetic deflecting means for deflecting a particle beam containing particles of different energies so that each particle follows a straight line path through the said deflecting structure along which straight line path an electrostatic wave propagates with a velocity substantially equal to the particle velocity whereby the path lengths of particles of different energies travelling between said plate elements varies and that each particle is deflected by a constant amount by said deflecting structure.

4,614,873

SIGNAL ISOLATOR WITH OPTICAL FIBER GROUNDING MEANS

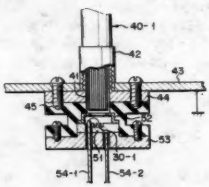
Tadashi Umeji, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 4, 1983, Ser. No. 548,729

Claims priority, application Japan, Nov. 9, 1982, 57-195347

Int. Cl.[4] G02B 27/00

U.S. Cl. 250—551 **10 Claims**



1. An electro-optical system to optically control a circuit comprising:

light elmitting means operatively connectible to a first voltage;

light receiving means provided in the circuit and operatively connectible to a second voltage souce having a higher voltage than said first voltage source;

optical fiber means arranged electrically isolated from said light emitting means and operable to transmit light signals from said light emitting means to said light receiving means to control the conduction states of said light receiving means; and

grounding means for electrically grounding said optical fiber means to cause leakage currents flowing through said optical fiber means to be discharged to ground.

4,614,874

ORIGINAL DOCUMENT SIZE DETECTING ARRANGEMENT

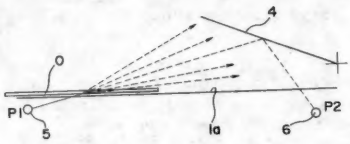
Hiroaki Fukuda, Nara; Kenji Sumiyoshi, Kyoto; Ryoichi Masaki, Tenri, and Zempei Tani, Tondabayashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 16, 1984, Ser. No. 571,187

Claims priority, application Japan, Jan. 21, 1983, 58-7765[U]; Jul. 19, 1983, 58-132104; Jul. 19, 1983, 58-132105

Int. Cl.[4] G01N 21/86

U.S. Cl. 250—560 **5 Claims**



1. A system for detecting the size of an original document in a copying maching comprising:

transparent means for supporting on a top surface thereof an original document for copying, said transparent means having a specified region upon which said original document must be placed in order to carry out a copying operation;

original cover means, pivotally disposed relative to said transparent means, for selectively covering and uncovering said top surface of said transparent means;

a plurality of discrete light emitting means, linearly arranged beneath a bottom surface of said transparent means and placed below said specified region upon which said original document must be placed in order to carry out a copying operation, for providing light pulse emmissions;

reflecting means, mounted to said original cover means and confronting said transparent means, for reflecting those light pulse emissions of said plurality of light emitting means whose optical paths are not blocked by an original document supported by said transparent means, said original cover means being positioned at an angle with respect to said transparent means greater than zero degrees at the time when said light emitting means provide said light pulse emissions;

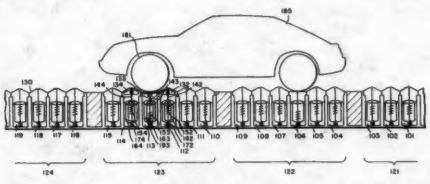
a plurality of light receiving means linearly arranged beneath the bottom surface of said transparent means for receiving said reflected light pulse emissions and each producing a detection output, wherein each of said light receiving means being associated with a respective discrete light emitting means, said light receiving means being placed below said transparent means outside said specified region, the line described by said linear arrangement of said plurality of discrete light emitting means being parallel to the line described by said linear arrangement of said plurality of light receiving means; and

judging means, responsive to said detection outputs, for determining original document sizes based upon said detection output from said light receiving means.

4,614,875
VEHICLE ACTUATED, ROADWAY ELECTRICAL GENERATOR

Terrill A. McGee, 4536 College View, Los Angeles, Calif. 90041

Filed Jan. 31, 1985, Ser. No. 697,040
Int. Cl.[4] F03G 3/00
U.S. Cl. 290—1 R 11 Claims



1. A system for generating electricity in cooperation with a roadway having a vehicle-passage surface adapted for contact traversal by wheeled vehicles, this system comprising:

(a) means transversely and interceptingly disposed in said vehicle-passage surface in a manner which permits activational rollover by the wheels of traversing vehicles;

(b) a spindle operatively associated with said transverse-intercept means and configured for axially-reciprocating motion activated upon said intercept means being encountered by said traversing wheels; and

(c) rotor-and-stator means for generating electricity, said generator being disposed with its rotor coaxially surrounding a portion of said reciprocable spindle; with

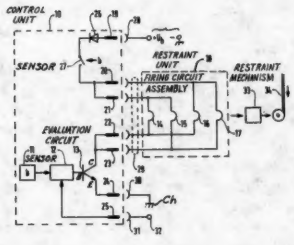
(d) said spindle having screw-thread means carried on its periphery; and with

(e) said rotor having yoke means carried on its spindle-surrounding interior, said yoke means being adapted to be matingly rotated by said screw-thread means when said spindle is axially reciprocated through said yoke.

4,614,876
VEHICLE PASSENGER RESTRAINT SYSTEM

Bernhard Mattes, Sachsenheim, Fed. Rep. of Germany; Eberhard Mausner, Linz, Austria, and Wadym Suchowerskyj, Leonberg, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 18, 1984, Ser. No. 631,933
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1983, 3326277
Int. Cl.[4] B60R 21/10
U.S. Cl. 307—10 SB 8 Claims



1. A vehicle passenger restraint system having: a plurality of electrically actuated restraint mechanisms (33, 34);

an electrical deceleration switch (11) sensing deceleration of a vehicle and providing an output signal upon sensing (12) deceleration representative of a collision or imminence of a collision;

a source (U_b) of electrical power;

electrical switch means (13), connected to and controlled by (B) the output signal, and closing an electrical circuit including respective individual restraint trigger firing circuits (14–17), each controlling operation of a respective restraint mechanism (33, 34),

each restraint trigger firing circuit having a current lead-in terminal (20, 21) connected to the source of power (U_b) and a current lead-off or return terminal (22, 23) connected to a first connection terminal (C) of the switch means (13), and then through a second connection terminal (E) of the switch means (13) to a return terminal (24, 30, Ch) of the source of power,

wherein, to facilitate testing of said restraint trigger firing circuits with a minimal number of test apparatus terminals,

the number of current lead-in terminals multiplied by the number of current lead-off or return terminals corresponds at least to the number of restraint trigger firing circuits (14–17); and

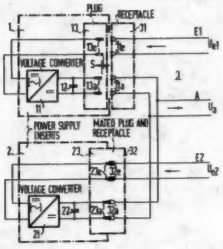
wherein

each restraint trigger firing circuit (14–17) is connected to a different selected pair of a current lead-in terminal (20, 21) and a current lead-off or return terminal (14: 21, 22; 15: 21, 23; 16: 20, 22; 17: 20, 23).

4,614,877
APPARATUS FOR A REDUNDANT POWER SUPPLY

Jakob Knesewitsch, and Manfred Pointner, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 18, 1985, Ser. No. 712,444
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410194; European Pat. Off., Jan. 18, 1985, 85100505.8
Int. Cl.[4] H02J 7/00; H01R 4/66
U.S. Cl. 307—64 9 Claims



1. In a redundant power supply of the type in which at least two power supply inserts are plug mated to and supported by receptacle apparatus by way of respective pair of matable electrical connectors, in which each power supply insert includes a respective voltage converter having an input for receiving a respective input voltage and an output to be connected in parallel by the plugging operation for delivering an output voltage to a common load, in which each voltage converter has an output capacitor connected across its output, and in which the matable electrical connectors have respective matable contacts for the input and output voltages, the improvement therein comprising:

voltage collapse prevention means for preventing discharge of the output capacitor of an operating one power supply insert upon plugging in of another not yet operating power supply insert, said voltage collapse prevention means comprising mounting means mounting the input voltage contacts ahead of the output voltage contacts in the plugging direction in one of the respective pair of electrical connectors so that the input voltage contacts engage and place the respective voltage converter into operation before the output voltage contacts engage and connect the output capacitors in parallel, and

insertion means for coupling the power supply inserts and the receptacle apparatus and operable to move a power

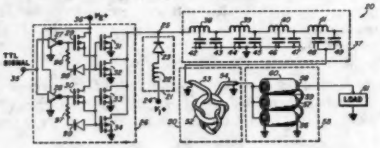
supply insert from a position where the input voltage contacts first engage to a position where all of the respective contacts are in complete engagement.

4,614,878

PULSE GENERATOR

John K. Lauchner, Tempe; Michael S. Christensen, Mesa, and Paul J. Alonge, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 11, 1985, Ser. No. 700,787
Int. Cl.[4] H03K 1/00
U.S. Cl. 307—106 **27 Claims**



1. A pulse generating device having an input, an output, a ground, a first and second voltage supplies, said pulse generating device comprising:

a first inductor having an input and an output, said input being coupled to said first voltage supply of said pulse generating device;

a first diode having an anode and a cathode, said anode being coupled to said output of said first inductor;

a first amplifier having an input, a ground line, a power line, and an output, said input being coupled to said input of said pulse generating device, said ground line being coupled to said ground, and said power line being coupled to said second voltage supply;

a first transistor having a gate, a source and a drain, said gate being coupled to said output of said first amplifier and said drain being coupled to said second voltage supply of said pulse generating device;

a second diode having an anode and a cathode, said anode being coupled to said source of said first transistor;

a first resistor having a first and a second end, said first end being coupled to said cathode of said second diode and said second end being coupled to said gate of said first transistor;

a second transistor having a gate, a source and a drain, and gate being coupled to said source of said first transistor, said source being coupled to said ground and said drain being coupled to said cathode of said first diode;

a second inductor having an input and an output, said input being coupled to said cathode of said first diode;

a first capacitor having an input and an output, said input being tapped into said second inductor and said output being coupled to said ground;

a second capacitor having an input and output, said input being coupled to said output of said second inductor and said output being coupled to said ground;

a third inductor having an input and an output, said input being coupled to said output of said second inductor;

a third capacitor having an input and an output, said input being tapped into said third inductor;

a fourth capacitor having a input and an output, said input being coupled to said output of said third inductor and said output being coupled to said output of said third capacitor;

a first coaxial transmission line having an inner conductor and an outer conductor each having a first end and a second end, said first end of said inner conductor being coupled to said output of said fourth capacitor and said first and second ends of said outer conductor being coupled to said ground;

a second coaxial transmission line having an inner conductor and an outer conductor each having a first end and second end, said first end of said inner conductor being coupled to said output of said fourth capacitor, said first end of said outer conductor being coupled to said ground and said second end of said outer conductor being coupled to said second end of said inner conductor of said first coaxial transmission line; and

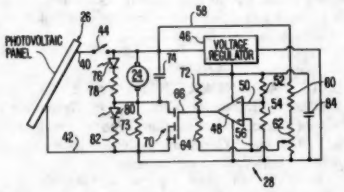
a third coaxial transmission line having an inner conductor and an outer conductor each having a first end and second end, said first end of said inner conductor being coupled to said output of said fourth capacitor, said first end of said outer conductor being coupled to said ground, said second end of said outer conductor being coupled to said second end of said inner conductor of said second coaxial transmission line and said second end of said inner conductor being coupled to said output of said pulse generating device.

4,614,879

PULSED MOTOR STARTER FOR USE WITH A PHOTOVOLTAIC PANEL

John C. Ault, Gainesville, Fla., assignor to Pulstar Corporation, Fla.

Filed Aug. 30, 1984, Ser. No. 645,628
Int. Cl.[4] H02J 1/00
U.S. Cl. 307—130 **14 Claims**



14. A circuit for converting solar energy into electricity for starting and running a load, comprising:

a photovoltaic panel for converting solar energy into electrical energy output having a voltage and a current;

a load requiring a starting current which is higher than a minimum running current;

means for sensing the output of said photovoltaic panel; and

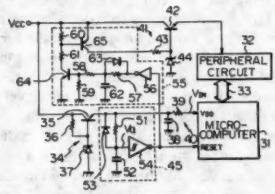
means responsive to said sensing means for applying said output to said load in pulses at a frequency which varies inversely with the maximum available power from said output;

wherein said sensing means comprises means for applying a resistance higher than said load resistance to said photovoltaic panel to cause said output to be in a high voltage range of a power curve of said photovoltaic panel, said applying means comprising control means for comparing said voltage of said output to a predetermined voltage level, and applying substantially all of said voltage across said load when said voltage is above said predetermined level, and a resistor connected in series with said load, said control means comprising a comparator connected to receive said voltage and said predetermined voltage level, and a semi-conductor switching device connected to an output of said comparator, said semi-conductor switching device being connected to selectively short said resistor.

4,614,880
POWER SUPPLY CIRCUITRY FOR A MICROCOMPUTER SYSTEM

Yasunao Go; Yoshiharu Ueki; Minoru Motohashi; Kozo Nozawa, and Sadami Hattori, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 3, 1983, Ser. No. 548,243
Claims priority, application Japan, Nov. 5, 1982, 57-167470[U]
Int. Cl.⁴ H03K *3/013;* G06F *11/00*
U.S. Cl. 307—200 A 6 Claims



1. A power supply circuitry for a control unit including at least a microprocessor and for a peripheral circuit connected to the control unit, comprising:

first power supply means for supplying a power current to said control unit in accordance with a command of the power supply;

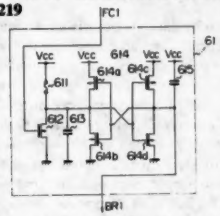
reset signal generating means connected to said first power supply means, for generating a reset signal from a point of time not later than a time at which said control unit enters into an operational state, for a time period longer than a predetermined length; and

second power supply means connected to said reset signal generating means, for supplying a power current to said peripheral circuit in response to said reset signal, said second power supply means including delay means for delaying a transmission of an extinction of said reset signal so that said power current is supplied to said peripheral circuit a predetermined time period after the extinction of said reset signal.

4,614,881
INTEGRATED SEMICONDUCTOR CIRCUIT DEVICE FOR GENERATING A SWITCHING CONTROL SIGNAL USING A FLIP-FLOP CIRCUIT INCLUDING CMOS FET'S AND FLIP-FLOP SETTING MEANS

Masanobu Yoshida, Kawaguchi, and Kiyoshi Itano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 27, 1984, Ser. No. 574,728
Claims priority, application Japan, Feb. 4, 1983, 58-016273
Int. Cl.⁴ H03K *3/356, 19/003*
U.S. Cl. 307—219 4 Claims



2. An integrated semiconductor circuit device, operatively connectable to a power source, for a switching control signal generation circuit generating a switching control signal, said switching control signal generation circuit comprising:

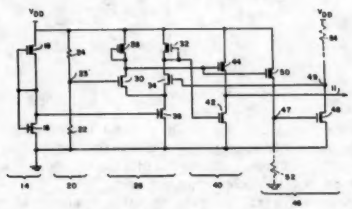
a fuse having a first terminal operatively connected to the power source and having a second terminal; and

a flip-flop circuit, operatively connected to said second terminal of said fuse, for generating the switching control signal which indicates a blown or unblown state of said fuse, said flip-flop circuit including a pair of complementary MOS fuekd effect transistor type inverters cross connected to each other.

4,614,882
BUS TRANSCEIVER INCLUDING COMPENSATION CIRCUIT FOR VARIATIONS IN ELECTRICAL CHARACTERISTICS OF COMPONENTS

Wayne C. Parker, Marlborough, and John W. May, Arlington, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 22, 1983, Ser. No. 554,493
Int. Cl.⁴ H03K *17/14, 17/687*
U.S. Cl. 307—443 12 Claims



1. A bus driver system in a monolithic integrated circuit for driving an external bus in response to a data signal, the system comprising:

A. selectively energizable driver means for connection to the external bus and having an energized state and a de-energized state, said driver means driving the bus when in the energized state;

B. pre-driver means connected to said driver means for selectively energizing and de-energizing said driver means in response to the data signal and a reference signal, said pre-driver means being responsive to the reference signal to adjust the rate at which it switches said driver means between energized and de-energized states;

C. reference means connected to said pre-driver means for generating said reference signal, said reference means comprising:

i. characteristic reference signal generating means comprising pre-driver compensating means and driver compensating means each having a electrical characteristic which varies with variations in the same electrical characteristic in said pre-driver means and said driver means, respectively, said driver compensating means and said pre-driver compensating means being interconnected to generate a characteristic reference signal, and

ii. reference signal generating means for generating said reference signal in response to said characteristic reference signal.

4,614,883
ADDRESS TRANSITION PULSE CIRCUIT

Lal C. Sood; James S. Golab, and Armando L. DeJesûs, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 1, 1983, Ser. No. 556,759
Int. Cl.⁴ H03K *19/094, 3/017, 5/13*
U.S. Cl. 307—449 15 Claims

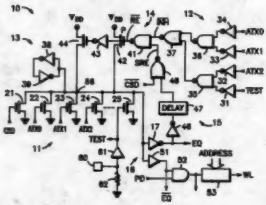
1. A circuit for generating an output pulse in response to an address transistion, comprising:

input means for switching a common node from a first logic state to a second logic state in response to receiving an address transition pulse generated in response to an address transistion;

output means coupled to the common node for providing an

output responsive to the logic state present on the common node;

delay means coupled to the output of the output means for providing a delayed signal in response to the common node switching from the first logic state to the second logic state, the delayed signal occurring a predetermined time duration following the switching of the common node;



charging means coupled to the common node and to the delay means for supplying current to the common node to drive the common node to the first logic state in response to receiving the delayed signal; and

inhibit means for inhibiting the charging means from supplying current to the common node in response to receiving the address transition pulse;

whereby the output of the output means provides the output pulse in response to an address transition.

4,614,884

INPUT INTERFACE CIRCUIT AS A BUFFER OF A LOGIC DEVICE TO IMPROVE THE SIGNAL TO NOISE RATIO OF THE LOGIC DEVICE

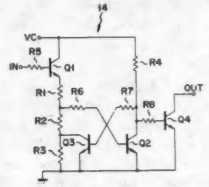
Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

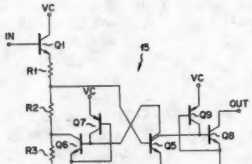
Filed Apr. 15, 1983, Ser. No. 485,248

Claims priority, application Japan, Apr. 21, 1982, 57-66615

Int. Cl.⁴ H03K *3/013, 3/283, 17/16, 19/092*

U.S. Cl. 307—475 **15 Claims**





1. An input interface circuit as a buffer of a logic device to improve the signal to noise ratio of the logic device comprising:

first and second potential terminals between which a power source voltage is applied;

variable resistive means having a control terminal for receiving first and second mode signals, said variable resistive means being set at a first resistance in response to a first mode signal and at a second resistance in response to a second mode signal, said first resistance being higher than that of said second resistance;

current-supplying means connected in series with said variable resistive means between said first and second potential terminals, having an input terminal for receiving an input voltage signal, and supplying a current corresponding to the input voltage signal to said variable resistive means; and

signal-generating means having switching means which has a control terminal connected to receive a control voltage proportional to the voltage drop across said variable resistive means and whose conduction state is controlled by the control voltage, which said signal-generating means generates an output signal of a first logic level when said switching means is conductive and that of a second logic level when said switching means is nonconductive, and supplies said output signal of the first and second logic levels respectively as said first and second mode signals to the control terminal of said variable resistive means.

4,614,885

PHASE SPLITTER WITH LATCH

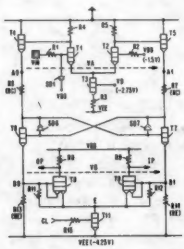
Rudolf Brosch, Sindelfingen; Joachim Keinert, Boeblingen; Erich Klink, and Friedrich C. Wernicke, both of Schoenaich, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1984, Ser. No. 630,544

Claims priority, application European Pat. Off., Aug. 17, 1983, 83108130.2

Int. Cl.⁴ H03K *3/023, 3/286, 3/288*

U.S. Cl. 307—513 **3 Claims**



1. Phase splitter with latch, comprising a true complement generator, a latch circuit, and an output stage, characterized in that the two outputs of the true complement generator, to whose input (VIN) the input signal is applied, are in each case connected to the input of an associated emitter-follower (T4, T5), that the two emitter followers (T4, T5) have identical emitter resistors (R6, R7) which simultaneously act as collector load resistors of two cross-coupled transistors (T6, T7) forming the latch and amplifier circuit, that the two cross-coupled transistors (T6, T7) also comprise identical but higher emitter resistors (R13, R14) than the emitter followers (T6, T7), that the emitters of the cross-coupled transistors (T6, T7) are each connected to one of the two inputs (B0, B1) of the output stage (T8, T9, T11) which through a clock-controlled switch (T11) is connected to operating voltage (VEE), pulling down the active emitter resistance of the cross-coupled transistors (T6, T7) below the value of the emitter resistors (R6, R7) of the emitter followers (T4, T5), thus causing the latch circuit to be latched as a function of the input signal.

4,614,886

ELECTRIC DRIVE UNIT ESPECIALLY FOR WINDSHIELD WIPERS OF A MOTOR VEHICLE

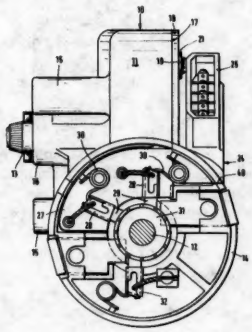
Theodor Schneider, Freudental/Wurtt., and Karl-Friedrich Schubert, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 4, 1983, Ser. No. 491,596

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220191

Int. Cl.[4] H02K 7/06

U.S. Cl. 310—83 16 Claims



1. An electric drive unit for use with a windshield wiper assembly comprising:

an electric motor having a motor shaft and a motor housing;

a gear housing;

a gearhead in said gear housing, said gearhead having an axial direction substantially, perpendicular to the axial direction of said motor shaft and having an open side;

an end shield closing one front face of said motor housing;

a brush plate within said motor housing and adjacent said end shield;

a constructional part comprising:

a cover closing said gearhead open side, and a receptacle on said cover for connecting contacts;

said brush plate, said cover and said receptacle being integrally formed in one piece of plastic material; and

said end shield includes a recess which is open in a direction towards the rim of said end shield, said brush plate being connected to said cover and receptacle through said recess and said constructional part closing said recess, said recess opens in the direction of said constructional part, said recess is located in front of said open side of said gearhead and said recess has one border which extends to the rim of said end shield and is substantially flush with the open side of said gearhead, and said recess has a second border substantially perpendicular to said one border, said second border extending in said axial direction at said gearhead.

4,614,887

DYNAMO ELECTRIC MACHINE CONSTRUCTION, PARTICULARLY FOR COMBINATION WITH A PUMP UNIT

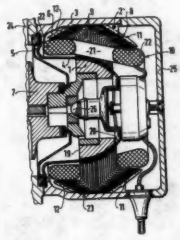
Peter Ahner, Ludwigsburg; Helmut Härer, Remseck, and Siegfried Schustek, Immenstaad, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 10, 1984, Ser. No. 679,915

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345581

Int. Cl.[4] H02K 17/00

U.S. Cl. 310—166 8 Claims



1. Dynamo electric machine construction particularly for combination with a circulating pump to form a combined motor-pump unit, having

a rotor (1) shaped to define at least part of a sphere, and rotatable about a theoretical axis passing through an axis of symmetry of the at least part-spherical rotor;

a stator (2) having a stator core (8), the stator being shaped to surround the at least part-spherical rotor and spaced therefrom by an at least part-spherical air gap;

a separating wall (4) of non-magnetic material and of at least part-spherical shape located in the air gap separating the rotor and the stator;

a rotor bearing (26) of at least part-spherical shape, and a matching bearing ball formed in the rotor, to permit wobbling movement of the rotor rotating within said at least part-spherical air gap,

wherein

the stator core comprises

a plurality of layers formed by an elongated continuous strip of electromagnetic sheet metal circumferentially wound about and arranged about said part-spherical air gap,

the strip of each sheet-metal layer being formed in L-shape and defining a first leg (17) and a second leg (18) of the L, the first leg extending at essentially right angle with respect to a second leg (18);

a plurality of notches (9') formed in said strip, the first leg (17) of the L of the strip being edge-wound so that said notches (9') will be open towards the air gap and to position adjacent turns of the edge-wound leg adjacent each other;

said notches extending at least essentially through the length of the first leg (17) of the L, and the relative position of the edges adjacent said notches being matched to the changing diameter of the spherical air gap as the layers progress from a position of smaller diameter to one of larger diameter;

said notches (9') forming winding slots in the adjacent turns and defining, therebetween, teeth (13), the projection of said teeth surrounding the at least part-spherical air gap; and

stator winding means (10, 21) wound in the winding slots (9) formed by the notches (9'),

said second leg (18) of the L-shaped strip forming adjacent overlapping layers of said strip and extending essentially parallel to the longitudinal axis of the stator (2) and defin-

ing a stepped, generally at least part-spherical outer magnetic circuit.

4,614,888

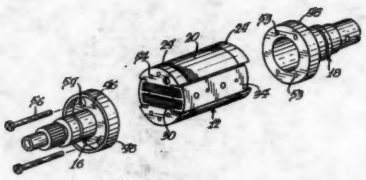
IMPROVED MAGNETIC ROTOR

Philip C. Mosher, Rockford, and Mohd A. Aleem, Roscoe, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Division of Ser. No. 523,924, Aug. 17, 1983, Pat. No. 4,562,641. This application Jul. 26, 1985, Ser. No. 759,213

Int. Cl.[4] H02K *1/22*

U.S. Cl. 310—261 **5 Claims**



1. A built-up rotor for an electric machine comprising:

a main rotatable core having a lengthwise rotational axis and spaced ends each having substantially the same cross-sectional configuration;

two end turn supports each with a cross-sectional configuration substantially matched to the cross section of the spaced core ends;

means removably securing an end turn support at each axial end of the core to form a core subassembly;

two end shaft fittings;

means removably securing an end shaft fitting to each of the end turn supports; and

a sleeve positionable over the core subassembly.

4,614,889

CHARGING DYNAMOELECTRIC MACHINE HAVING REDUCED NOISE OUTPUT

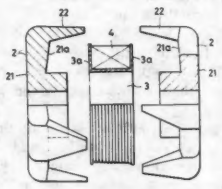
Takashi Ikegami, and Masakazu Mori, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,716

Claims priority, application Japan, Apr. 18, 1984, 59-59057[U]

Int. Cl.[4] H02K *3/16, 5/24*

U.S. Cl. 310—263 **5 Claims**



1. A charging dynamoelectric machine having a rotor comprising:

a pair of magnetic poles each including a yoke press fitted onto a rotary shaft and a plurality of magnetic pole claws extending from each said yoke;

a field winding frame positioned between said pair of said yokes and held thereby; and

means for applying a preload between respective inner surfaces of said yokes and an outer radial portion of said field winding frame greater than a preload between said respective inner surface and an inner radial portion of said field winding frame.

4,614,890

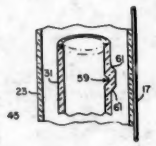
HIGH INTENSITY DISCHARGE LAMP ALKALI METAL LOSS REDUCTION MEANS

Vincent D. Meyer, Hamilton, and William M. Keeffe, Rockport, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed May 7, 1984, Ser. No. 607,550

Int. Cl.[4] H01J *1/02*

U.S. Cl. 313—25 **13 Claims**



1. A high intensity discharge lamp comprising a hermetically sealed outer envelope, an arc tube containing sodium, having a portion of increased wall thickness and disposed within said envelope and a metal conductor located within said outer envelope and positioned immediately adjacent said portion of increased wall thickness of said arc tube whereby loss of sodium from said arc tube is reduced.

4,614,891

PHOTOCONDUCTIVE TARGET OF IMAGE PICKUP TUBE

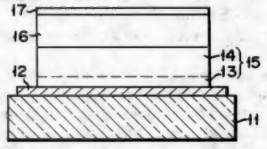
Takao Kuwahata, Tokyo; Sohei Manabe, Yokohama; Katsuhiro Gonpei, Yokohama, and Masatoki Nakabayashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1984, Ser. No. 686,401

Claims priority, application Japan, Dec. 28, 1983, 58-245181

Int. Cl.[4] H01J *31/00, 31/26*

U.S. Cl. 313—386 **4 Claims**



1. A photoconductive target of an image pickup tube, comprising:

a transparent substrate,

a transparent electro-conductive layer formed on said transparent substrate,

a photoconductive layer which contains cadmium, tellurium and selenium as major components and is formed on said transparent electro-conductive layer said photoconductive layer being formed of a single phase of a continuous multilayer in which cadmium telluride and cadmium selenide are alternately deposited without defined boundaries existing between these materials, and

a high resistance layer formed on said photoconductive layer,

molar ratios of cadmium, tellurium and selenium contained in said photoconductive layer satisfy a gencral formula $CdTe_{1-x}Se_x$ where x falls within a range between 0.3 and

0.5 thereby producing a photoconductive target with high sensitivity in the infra-red band.

4,614,892

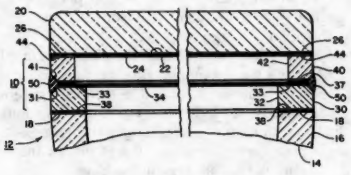
TENSION MASK MOUNTING STRUCTURE

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Aug. 31, 1984, Ser. No. 646,861

Int. Cl.[4] H01J *29/81, 31/00, 1/90, 1/46*

U.S. Cl. 313—402 **8 Claims**



8. A tension mask color cathode ray tube comprising:

an envelope funnel having a central axis and including a bell portion, one extremity of which has a sealing land;

a flat face panel formed of a material having a predetermined temperature coefficient of expansion and comprising a target surface having a pattern of luminescent primary color elemental phosphor areas deposited thereon and a peripheral sealing area circumscribing said target surface which is substantially narrower in width than said funnel sealing land; and

a color selection electrode assembly permitting selective excitation of said phosphor areas by a scanning beam of electrons comprising

a planar tensed foil formed of a material having a temperature coefficient of expansion greater than that of said panel and having a predetermined pattern of apertures;

a constituent structure formed of a non-conductive material and disposed between said funnel sealing land and said panel sealing area and frit sealed therebetween to form an integral part of the tube envelope and defining a central opening dimensioed to enclose said target of said face panel and formed of a material having a temperature coefficient of expansion approximating that of said face panel,

said structure comprising means defining a support surface confronting said target and adapted to fixedly receive said tensed foil,

said constituent structure having forward and rear sealing lands adapted to be sealed to said face panel sealing area and said funnel sealing land, respectively, said forward sealing area being substantially narrower in width than said rear sealing land.

4,614,893

COLOR DISPLAY TUBE

Constant J. M. Geenen, and Leonardus A. M. Elshof, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 676,222, Nov. 29, 1984, abandoned. This application Nov. 26, 1985, Ser. No. 802,080

Claims priority, application Netherlands, Sep. 30, 1980, 8005409

Int. Cl.[4] H01J *29/81*

U.S. Cl. 313—403 **4 Claims**

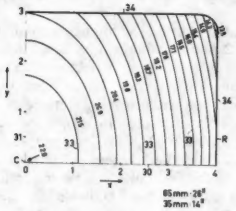
1. A color display tube, comprising:

an evacuated envelope including a substantially rectangular display window connected to a conical portion coupled to a neck;

a display screen on the inside of the display window, the screen comprising triplets of striped-shaped regions which can luminesce in three colors, the regions extending substantially perpendicularly to the long sides of the display window;

an electron gun system in the neck, the system having three electron guns for generating three electron beams during normal operation of the tube, the guns being situated with their longitudinal axes in a plane extending substantially perpendicularly to the stripe-shaped regions, and

a shadow mask for associating each electron beam with a stripe-shaped region of one color, the mask being disposed between the display screen and the electron gun system,



the mask including a metal sheet having rows of slot-shaped apertures extending substantially parallel to the stripe-shaped regions, adjacent apertures in a row being separated from one another by ridges, the apertures being elongate in the direction of the rows, one row of apertures being allotted to each triplet, characterized in that the apertures in the metal sheet are arranged and dimensioned such that places on the mask of equal electron beam transmission are situated on elliptical curves each having a short main symmetry axis in the plane and a long main symmetry axis perpendicular to the plane.

4,614,894

ELECTRON GUN FOR COLOR PICTURE TUBE

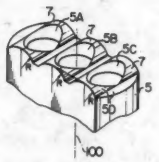
Yukihiro Izumida, Mobara, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Dec. 5, 1983, Ser. No. 558,277

Claims priority, application Japan, Dec. 6, 1982, 57-212787; Dec. 15, 1982, 57-218380; Dec. 17, 1982, 57-220080

Int. Cl.[4] H01J *29/50, 29/56*

U.S. Cl. 313—414 **22 Claims**



1. An electron gun for color picture tube with a tube axis comprising:

three cathodes arranged in line in a first direction substantially perpendicular to said tube axis said cathodes emitting three electron beams;

a first electrode having three first electron beam passing holes arranged in line in said first direction so as to allow the corresponding electron beams to pass therethrough, and a surface having opening edges of said first electron beam passing holes, each of said first electron beam passing holes having its center coinciding with the center axis of the corresponding electron beam when viewed along said tube axis; and

a second electrode disposed to oppose said first electrode and having three second electron beam passing holes arranged to oppose said first electron beam passing holes,

respectively, and to allow the corresponding electron beams to pass therethrough, and a surface having opening edges of said second electron beam passing holes, each of said second electron beam passing holes having its center coinciding with the center axis of the corresponding electron beam when viewed along said tube axis, said surface of said second electrode being opposed to said surface of said first electrode with a predetermined distance kept therebetween along said tube axis, said second electrode cooperating with said first electrode so as to form main electrostatic focusing lenses for said electron beams when said first and second electrodes are supplied with predetermined potentials, respectively;

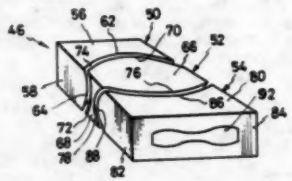
wherein each of said electron beam passing holes has a shape in which the maximum dimension in a second direction perpendicular to said first direction is larger than the maximum dimension in said first direction and larger than the center-to-center spacing between said electron beam passing holes arranged in line, a substantial part of said surface of each of said first and second electrodes is formed of a curved surface, at least part of said opening edge of each of said electron beam passing holes is defined in said curved surface, and said distance along said tube axis, between said surfaces of said first and second electrodes disposed to oppose, is made larger at least at one of the edge portions of said opening edge determining the maximum dimension in said first direction than that at the edge portions of said opening edge determining the maximum dimension in said second direction.

4,614,895

POSTACCELERATION CATHODE RAY TUBE WITH AN ELECTRON LENS SYSTEM FOR DEFLECTION AMPLIFICATION

Kimiharu Saito, and Osamu Akizuki, both of Hino, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1985, Ser. No. 726,420
Claims priority, application Japan, May 1, 1984, 59-88156
Int. Cl.[4] H01J 29/80
U.S. Cl. 313—429 **14 Claims**



1. Apparatus including a cathode ray tube having a target, an electron gun for emmiting a beam of electrons directed toward the target, deflection means disposed along the path of the beam for deflecting the beam in two orthogonal directions, a scan expansion lens system disposed along the path of the beam intermediate the deflection means and the target for amplifying the deflections of the beam, and a postaccelerating electrode disposed adjacent the scan expansion lens system so that an electric field due to the postaccelerating electrode acts at least upon a target side end portion of the lens system, the scan expansion lens system comprising:

(a) first and second tubular electrodes of substantially rectangular cross sectional shape disposed in axial alignment to allow the passage of the beam therethrough and spaced apart from each other with a gap sufficient to electrically insulate them from each other, each of the first and second electrodes having a beam entrance end directed toward the electron gun and a beam exit end directed toward the target;

(b) the first electrode having a first pair of opposite sides disposed in one of the two orthogonal directions of beam deflection and a second pair of opposite sides disposed in the other of the orthogonal directions;

(c) the second electrode having a third pair of opposite sides disposed in said one of the orthogonal directions and a fourth pair of opposite sides disposed in the other of the orthogonal directions, at least either of the beam exit ends of the first pair of opposite sides of the first electrode and the beam entrance ends of the third pair of opposite sides of the second electrode being each curved in an arc that is convex in a prescribed direction;

(d) the second electrode further having an end plate closing the beam exit end thereof, the end plate having defined therein an aperture generally elongated in said one of the orthogonal directions;

(e) the appartus further including means for applying prescribed electrical potentials to the first and second electrodes of the lens system and to the postaccelerating electrode to cause the lens system to amplify the deflections of the beam in both of the orthogonal directions by providing a divergent lens action in said one of the orthogonal directions and a convergent lens action in the other;

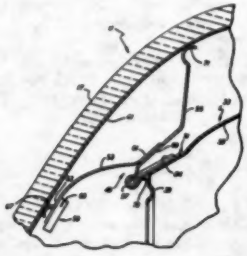
(f) the aperture in the end plate of the second electrode of the lens system gradually increasing, and then gradually decreasing, in its dimension in said other of the orthogonal directions from the midpoint of the aperture toward the opposite extremities thereof in said one of the orthogonal directions, whereby such equipotentials are created at and adjacent the end plate aperture of the second electrode by a potential difference between the second electrode and the postaccelerating electrode that the end plate aperture serves to amplify beam deflection in said one of the orthogonal directions without a sacrifice of the linearity of the deflection factor in that direction.

4,614,896

GETTER AND CONTACT ASSEMBLY FOR A CATHODE RAY TUBE

Mark A. Josephs, Seneca Falls; Roman Milikovsky, DeWitt; Carl W. Penird, Waterloo, and Charles H. Rehkopf, Seneca Falls, all of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Nov. 19, 1984, Ser. No. 673,242
Int. Cl.[4] H01J 29/94
U.S. Cl. 313—481 **7 Claims**



1. An improvement in a color cathode ray tube having a glass envelope of integrated neck, funnel and face panel portions, a plural beam electron gun in the neck portion, a phosphor screen having a plurality of phosphor elements on the interior surface of the face panel portion, an aperture mask adjacent the screen for directing the electron beams to the desired phosphor elements, an internal magnetic shield attached to the aperture mask for shielding the beams from external stray magnetic fields, and a conductive coating disposed on the interior surface of the glass envelope to provide electrical connection between the terminal portion of the gun and the mask, said improvement being an integrated getter

assembly and contactor means and an associated mounting bracket, characterized in that:

(a) the getter assembly and contactor means comprises intermediate attachment means, opposed first and second resilient cantilever elements extending longitudinally from the intermediate attachment means; said first cantilever element being the wand portion of the getter assembly and oriented toward the neck portion of said tube; and having an apertured getter container attached to the terminal portion of the wand for making sliding contact with said conductive coating; said opposed second cantilever element being a resilient arm-like electrical contactor, oriented toward the panel portion of said tube; and having a terminal portion for making sliding contact with said conductive coating; said getter assembly and contactor means being a structure suitable for insertion through said neck portion into the interior of said tube after sealing of the panel and funnel portions; and

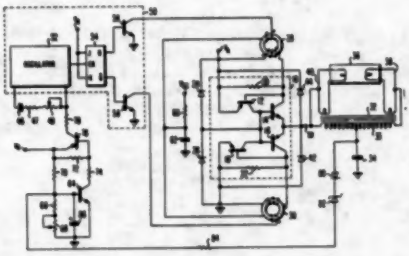
(b) the associated mounting bracket for said structure comprises a base member affixed to said internal magnetic shield and having an edge oriented toward the neck portion of said tube and formed to receive and hold said attachment means upon introduction of the getter assembly and contactor means through the open neck into the sealed envelope of the tube.

4,614,897

SWITCHING CIRCUIT

Robert A. Kumhatovic, Bridgewater, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 11, 1984, Ser. No. 609,360
Int. Cl.[4] H05B *37/02*
U.S. Cl. 315—224 **17 Claims**



1. An electronic switching circuit, comprising:

a first latch and a second latch, each latch having an input terminal and an output terminal and including a driver stage and an output stage, the driver stage being responsive to on-state and off-state signals applied to the input terminal for driving the output stage to provide an output current and a substantially zero current respectively at its output terminal, said output and driver stages of each latch being coupled in a regenerative feedback loop for decreasing the off-state to on-state switching time of each latch;

means connecting the output terminal of said first latch and the output terminal of said second latch to a common output terminal, said first latch being connected to provide an output current in one direction between its output terminal and said common output terminal and said second latch being connected to provide an output current between its output terminal and said common output terminal in the opposite direction to said one direction;

means interconnecting the driver stages of the first and second latches for coupling the driver stage of each latch to the output stage of the other latch and driving the output stage of the other latch into a state complementary to the state into which the driver stage drives its associated output stage, thus decreasing the switching time of the circuit; and

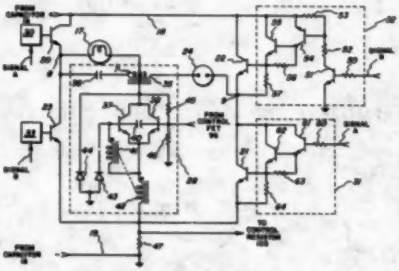
means for coupling the switching circuit across a source of operating potential.

4,614,898

ELECTRONIC BALLAST WITH LOW FREQUENCY AC TO AC CONVERTER

Abdallah M. Itani, Ballston Spa, and Victor D. Roberts, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 24, 1985, Ser. No. 748,077
Int. Cl.[4] H05B *37/02*
U.S. Cl. 315—224 **11 Claims**



1. A method for starting and operating a gas discharge lamp connected to a full-bridge DC to AC converter, said method comprising the steps of:

(1) locking said converter into a single phase so that one output of said converter is held substantially at the voltage at one of the inputs of said converter and the other output of said converter is held substantially at the voltage at the other input of said converter;

(2) coupling to a high frequency signal to said lamp at a converter output until an arc is established and becomes stabilized in said lamp; and

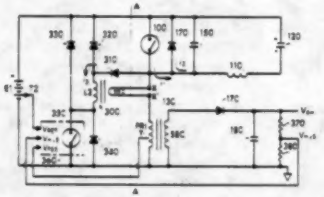
(3) thereafter switching said converter at a low frequency, whereby said lamp runs in a normal condition.

4,614,899

VOLTAGE REGULATOR FOR PULSED VOLTAGE POWER SUPPLIES

Richard C. Webb, and James R. Webb, both of Boulder, Colo., assignors to Data Ray Corporation, Broomfield, Colo.

Filed Jul. 8, 1983, Ser. No. 512,152
Int. Cl.[4] H01J *29/70*; G05F *1/140*
U.S. Cl. 315—411 **11 Claims**



1. A voltage regulator for a pulsed voltage power supply, said supply being capable of generating a series of (V_{XH}) voltage pulses (E_P) to produce an unregulated voltage at the output of said supply, said voltage regulator comprising:

first means (370, 380) connected to the output of said supply for producing voltage feedback signals (V_{HVS}) proportional to the magnitude of said output voltage (V_{XH}),

second means (T1) receptive to said voltage pulses (E_P) for producing timing signals (V_{FBS}) corresponding to the time for generation of each said voltage pulses (E_P),

third means (T2) for producing a reference voltage (V_{REF}), and

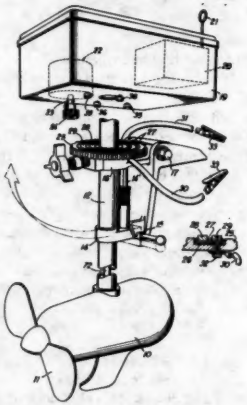
means (300, 350, 360) receptive of said voltage feedback signals (V_{HVS}) from said first producing means, of said timing signals (V_{FBS}) from said second producing means, and of said reference voltage (V_{REF}) from said third producing means for applying sufficient additional voltage (E_A) during said generation time of each of said voltage pulses (E_P) in order to maintain the voltage feedback signal (V_{HVS}) substantially equal to the reference voltage (V_{REF}) thereby maintaining the combined voltage pulses (E_P and E_A) near a regulated level (E_{PD}).

4,614,900

REMOTE CONTROLLED DRIVING SYSTEM FOR A BOAT

Joseph C. Young, 1390 Devonshire Dr., Montgomery, Ala. 36116

Filed May 3, 1985, Ser. No. 730,070
Int. Cl.[4] B63H *21/26*
U.S. Cl. 318—16 **14 Claims**



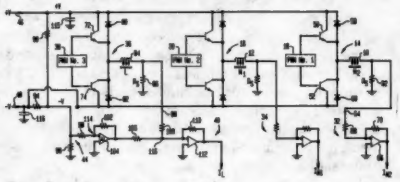
1. A remote controlled trolling system comprising an electric trolling motor capable of straightaway propulsion and selective direction propulsion, a rotational support shaft carrying the trolling motor, bracket means carrying said support shaft and being adapted for attachment to a boat, a rotational gear fixed on said support shaft to effect rotation of the support shaft with the trolling motor in two directions, electrical slip rings on said rotational gear, a turning servo motor which is reversible and having a drive pinion in mesh with said rotational gear on said support shaft, a radio receiver, right and left turn electrical relays and coacting right and left turn relay switches electrically connected with terminals of said receiver, with terminals of said turning motor and with the electrical slip rings through slip ring brushes, a trolling motor propulsion relay and a coacting trolling motor on-off relay switch electrically connected through switch terminals with the trolling motor and said turning motor, and a remote radio transmitter unit operable with said receiver to selectively energize and de-energize said right and left turn relays and said trolling motor propulsion relay.

4,614,901

SERVO POWER AMPLIFIER HAVING LOAD EQUALIZATION

Uri Kullman, Northridge, and William H. Jordan, Arcadia, both of Calif., assignors to Kennedy Company, Monrovia, Calif.

Filed Oct. 15, 1985, Ser. No. 787,413
Int. Cl.[4] H02P *1/58*
U.S. Cl. 318—99 **22 Claims**



1. A system for controlling at least two direct current, reversible motors driven by a source of dual polarity direct current power, comprising:

a motor control circuit associated with each of said motors and coupled between the corresponding motor and said direct current power source, each motor control circuit being operative to control the delivery of power from said source to the corresponding motor and creating a voltage imbalance in said power source as a result of the return of power from the corresponding motor to said source; and

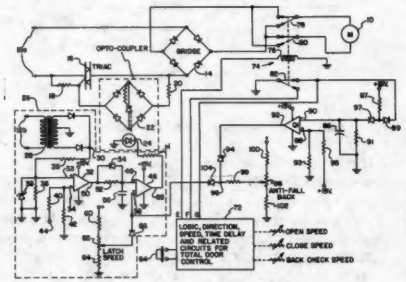
means coupled with each of said motor control circuits and with said source for equalizing the load on said source whereby to balance the voltage supplied by said source.

4,614,902

CLOSURE RETENTION APPARATUS FOR AUTOMATIC DOORS

Frank L. Jessup, 8150 20th Ct., Sunrise, Fla. 33322

Filed Feb. 26, 1985, Ser. No. 705,624
Int. Cl.[4] H02P *7/06, 1/22*
U.S. Cl. 318—282 **6 Claims**



1. Closure retention apparatus for automatic doors comprising:

a direct current, reversible, door-operating motor operable to change direction upon reversal of the polarity of energized voltage,

first circuit means for applying a first level of power temporarily for a predetermined period of time to said motor for operating the door from open toward closed position, said first circuit means including a power supply coupled to said motor which converts alternating current power to direct current power, said power supply including a first source of alternating current voltage and a rectifier having alternating current input and direct current output cir-

cuits, the output circuit being coupled to said motor, said circuit means further including a phase-firing network connected in the input circuit of said power supply for controlling the phase of the alternating current power applied to said rectifier between full cycle and partial cycle conditions, and a phase control circuit for generating a first phase-firing signal for providing said first level of power for said motor, and

second circuit means for applying a second level of power continuously to said motor after application of said first level of power to said motor and at the end of said period of time.

4,614,903
WINDSHIELD WIPER SPEED CONTROL ARRANGEMENT

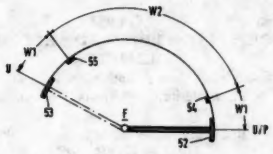
Helmut Betsch, Sachsenheim; Walter Bierent, Ludwigsburg; Günther Gille, Sersheim; Horst Goertler, Sachsenheim; Hans Prohaska, and Horst Rachner, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 14, 1984, Ser. No. 651,226

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333119

Int. Cl.[4] H02P *3/06*

U.S. Cl. 318—443 **24 Claims**



1. In a circuit arrangement for a reversible electric motor for directly driving an element in pendulum-fashion between two reversing positions, especially a windshield wiper on motor vehicles, and wherein the polarity of the supply voltage for the motor is reversed in the reversing positions via a reversing switch or is switched off in a parking position, the improvement comprising:

a switching stage for controlling energization of said motor such that the rotational speed of said motor is reduced in predetermined angular ranges, said motor is operated at reduced rotational speed in defined angular ranges before each reversing position and the size of said angular range before said parking position or said reversing position is variable in dependence on certain measured parameters.

4,614,904
CAPACITOR-RUN DRY TYPE SUBMERSIBLE MOTOR ASSEMBLY WITH A BUILT-IN STARTING CAPACITOR

Shigeru Yamazaki; Kazuo Nirasawa, and Sinji Nishimori, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Sep. 18, 1984, Ser. No. 651,774

Claims priority, application Japan, Sep. 30, 1983, 58-153082

Int. Cl.[4] H02P *1/44*

U.S. Cl. 318—793 **1 Claim**

1. An assembly for a capacitor-run submersible dry motor comprising:

first and second input terminals adapted to receive single phase electric power;

a main winding connected between said first and second input terminals;

an auxiliary winding, a first end of which is connected to said first input terminal;

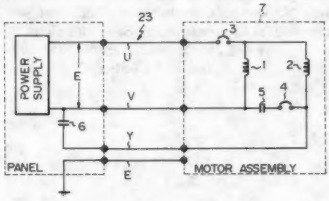
a starting capacitor contained in said assembly, a first end of which is connected to said second input terminal for introducing an advanced phase of power into said auxiliary winding;

a centrifugal switch contained in said assembly and connected between a second end of said starting capacitor and a second end of said auxiliary winding;

means for maintaining said centrifugal switch closed during starting of the motor;

means for opening said centrifugal switch when the motor has reached a predetermined speed;

a third input termnal adapted to be connected to a first end of a running capacitor located in an electric distribution



panel external to said assembly, said third input terminal being connected to said second end of said auxiliary winding for supply an advanced phase of power from said running capacitor during the entire operation of the motor, said second input terminal being adapted to be connected to a second end of said running capacitor; and

a fourth terminal connected to the frame of the motor for connecting said frame to ground at said panel, all of said four terminals being adapted to be connected to a four-conductor cable for connecting said assembly to said panel.

4,614,905
CHARGING REGULATOR

Bo A. O. Petersson, Hägersten; Leif T. Hansson, Rönninge, and Per-Edward Samsioe, Sollentuna, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

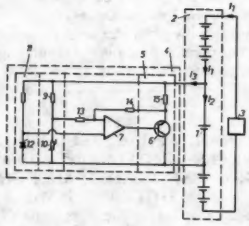
PCT No. PCT/SE83/00350, § 371 Date May 18, 1984, § 102(e) Date May 18, 1984, PCT Pub. No. WO84/01675, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 10, 1983, Ser. No. 616,211

Claims priority, application Sweden, Oct. 12, 1982, 8205797

Int. Cl.[4] H02J *7/08*

U.S. Cl. 320—18 **7 Claims**



1. A regulator (4) with a shunt circuit (5) for regulating a charge current (I_2) to an individual cell (1) in a battery (2) of cells, where the current (I_2) constitutes the whole or a part of a trickle current (I_1) applied to the battery, characterized in that the regulator includes a bridge connection having its inputs connected in parallel with the shunt circuit to the poles of the cell, one branch of the bridge coupling supplying a constant voltage, and the other branch supplying a voltage

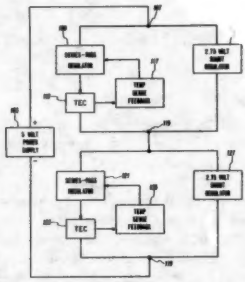
proportional to the cell pole voltage, the difference in these two voltages being utilized for continuously regulating the impedance of the shunt circuit, the result of which having a continuous smoothly varying regulation of the charging current (I_2) as a function of the cell pole voltage, the regulator obtaining its driving voltage from the cell poles, thus the regulator together with the cell, constitute an autonomous unit, for keeping a constant voltage between the cell poles by means of the applied trickle current (I_1).

4,614,906

SERIES CIRCUIT REGULATING APPARATUS

Kenneth Y. Maxham, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 3, 1985, Ser. No. 751,396
Int. Cl.[4] G05F *1/577*
U.S. Cl. 323—267 **11 Claims**



1. Current regulating apparatus for use with a load which requires a voltage of much less than the voltage of a source comprising, in combination:

power source voltage supply means of a predetermined voltage value having first and second terminal means;

a plurality of shunt regulator means connected in series across said first and second terminal means, each shunt regulator means having a given breakdown voltage, the sum total breakdown voltage value of all of said plurality of shunt regulators being greater than said predetermined voltage value; and

a plurality of series regulator circuits each connected in parallel with a corresponding shunt regulator means wherein each of said plurality of series regulator circuits includes,

a series pass current regulator means,

a current using load means, and

feedback means from the load means to the series pass current regulator means for regulating the current supplied to said load means.

4,614,907

METHOD OF OBTAINING PSEUDOFILTERING EFFECT IN PROCESS OF DATA ACCUMULATION AND NUCLEAR MAGNETIC RESONANCE SPECTROMETRY UTILIZING SAME

Kuniaki Nagayama, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Nov. 6, 1984, Ser. No. 668,647
Claims priority, application Japan, Nov. 11, 1983, 58-212188
Int. Cl.[4] G01N *24/00*
U.S. Cl. 324—312 **5 Claims**

1. A method of obtaining a pseudofiltering effect in the process of collecting data comprising the steps for:

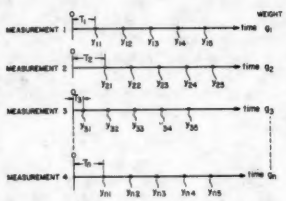
(a) repeatedly generating a time origin signal;

(b) after a delay period sampling a signal at regular intervals following the time origin signal;

(c) converting the sampled values to digital form;

(d) accumulating the resulting digital data;

(e) repeating steps (a) to (d) changing the duration of the delay period; and



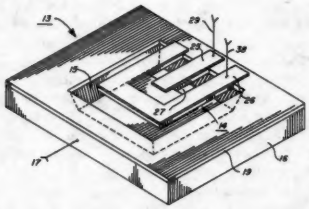
(f) performing arithmetic operations upon the data to remove unwanted frequency components.

4,614,908

MICRODEFLECTOR PROBE FOR ELECTROSTATIC VOLTMETERS

Joseph J. Daniele, Pittsford, and Martin E. Banton, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 13, 1984, Ser. No. 600,061
Int. Cl.[4] G01R *29/12*
U.S. Cl. 324—458 **9 Claims**



1. In an electrostatic voltmeter for measuring the voltage on a surface, the combination of:

(a) a probe having at least one microdeflector, said microdeflector including

(1) a base having a well therein;

(2) a flexible finger on said base spaced over said well, said well permitting said finger to deflect relative to said base;

(3) separate driven and sensing electrodes on said finger, said base and said electrodes cooperating to form a capacitive type relationship between said base and each of said electrodes individually; and

(4) means for bringing said driven electrode into capacitive relation with said surface so that a charge representative of the voltage on said surface is produced on said driven electrode to cause said finger to deflect, deflection of said finger changing the capacitive relative between said base and said sensing electrode; and

(b) means for converting a change in capacitance between said base and said sensing electrode to a signal representing the voltage on said surface.

4,614,909

APPARATUS FOR IDENTIFYING DIGITAL MULTI-FREQUENCY SIGNALS

Staffan Järvfält, Huddinge, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

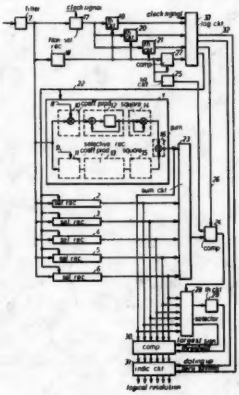
PCT No. PCT/SE83/00107, § 371 Date Nov. 23, 1983, § 102(e) Date Nov. 23, 1983, PCT Pub. No. WO83/03732, PCT Pub. Date Oct. 27, 1983

PCT Filed Mar. 25, 1983, Ser. No. 558,420

Claims priority, application Sweden, Apr. 6, 1982, 8202191

Int. Cl.[4] H04M *1/50*; G06F *15/31*

U.S. Cl. 328—140 **3 Claims**



1. Apparatus for identifying incoming digital multi-frequency signals possibly inclusive of noise signals; said apparatus comprising a digital bandpass filter and a plurality of selective receivers coupled to said filter, said filter receiving said signals and the received signals being processed as input signals in said plurality of selective receivers, said selective receivers answering to received discrete frequencies, said selective receivers including means by which first the signal by each of said receivers is multiplied at sampling times by a coefficient from each of first and second sets of coefficients, the first set being the product of a sine function and a weighting function and the second set being the product of said sine function phase-shifted $\pi/2$ and said weighting function; the selective receivers including second means by which the multiplication products of the input signal and said coefficients are individually squared and the thusly squared results summed so that there is obtained a measure of signal energy within the passband, said apparatus further including first and second non-selective receivers coupled to said filter and in which the received signals are subjected to an absolute amount generation and digital lowpass filtering; the first receiver being responsive to changes in a thusly resulting composite input signal level, said first receiver in response to these changes controlling the start of calculation periods for the selective receivers and being zero-set after time periods of a length which is relatively small in relation to the lengths of the incoming signals and noise signals and of a length relatively large in relation to the longest time sequence of envelopes of the input signals, the second receiver generating a signal which is a measure of envelope amplitude; summing means coupled to said selective receivers for forming a sum signal from the signals generated by all of said selective receivers; squaring means for receiving and squaring an output signal received from said second non-selective receiver, a comparison means for comparing the sum signal with the signal obtained by squaring the output signal from the second non-selective receiver in response to said output signal being less than a determinable threshold and also in response to the circumstance that the signal from the first non-selective receiver does not increase or decrease beyond established sampling values; logical circuit means coupled to said comparison means for selecting, if comparison establishes that the sum signal is greater, the greatest of the selective receivers' output signals; threshold circuit means for forming a threshold value proportional to said greatest signal; and comparison circuit means coupled to said threshold circuit means, to said logical circuit means and to said selective receivers for determing in relation to a threshold value that a digital multi-frequency signal has been received.

4,614,910

QUARTERNARY DIFFERENTIAL PSK DEMODULATOR

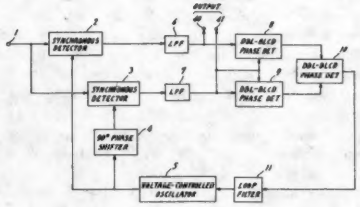
Yukinobu Ishigaki, Tokyo, and Kazutoshi Hirohashi, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 710,211, Mar. 11, 1985, abandoned. This application Jul. 22, 1985, Ser. No. 757,847

Claims priority, application Japan, Mar. 12, 1984, 59-46880; Mar. 19, 1984, 59-52744; Jul. 24, 1984, 59-153562

Int. Cl.[4] H04L *27/22*

U.S. Cl. 329—50 **12 Claims**



1. A quarternary differential PSK (phase shift keying) demodulator having an input terminal, a pair of output terminals, first and second synchronous detectors each having first and second input terminals and an output terminal, the first input terminals of the synchronous detectors being connected together to said input terminal of the demodulator and the output terminals of the detectors being respectively coupled to said output terminals of the demodulator, a 90-degree phase shifter, a variable frequency oscillator for supplying a carrier to the second input terminal of said first synchronous detector and to the second input terminal of said second synchronous detector through said 90-degree phase shifter, and a loop filter for supplying a phase control signal to said oscillator, the improvement comprising:

a first double-balanced phase detector responsive to the outputs of said first and second synchronous detectors for generating a first phase detector output representative of a product of the outputs of said first and second synchronous detectors;

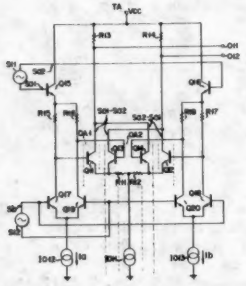
a second double-balanced phase detector responsive to the output of said second synchronous detector for generating a second phase detector output representative of a square of the output of said second synchronous detector; and

means responsive to output signals from said first and second double-balanced phase detectors for supplying an output signal having a frequency four times higher than the frequency of the signals generated by said first and second synchronous detectors to said loop filter.

4,614,911
BALANCED MODULATOR CIRCUIT

Mitsumo Kawano, Honjo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 12, 1984, Ser. No. 680,789
Claims priority, application Japan, Dec. 17, 1983, 58-238671
Int. Cl.[4] H03C *1/54;* H03B *19/10;* H03D *13/00*
U.S. Cl. 329—101 11 Claims



5. A circuit comprising:

first differential amplifier means, for differentially amplifying a first signal, and including a first differential pair of transistors, and first and second output terminals from which first and second differentially amplified signals having opposite phases are output, said first differential pair of transistors comprising first and second transistors, which each have bases, collectors and emitters, the collector of said first transistor being connected to said first output terminal, the collector of said second transistor being connected to said second output terminal, and first resistor means connected between the emitters of said first and second transistors;

second differential amplifier means, for differentially amplifying said first signal, and including a second differential pair of transistors, a third output terminal coupled to said second output terminal from which a third differentially amplified signal is output in phase with said first differentially amplified signal, and a fourth output terminal coupled to said first output terminal from which a fourth differentially amplified signal is output in phase with said second differentially amplified signal, said second differential pair of transistors comprising third and fourth transistors, which each have bases, collectors and emitters, the collector of said third transistor being connected to said third output terminal, the collector of said fourth transistor being connected to said fourth output terminal, and second resistor means connected between the emitters of said third and fourth transistors;

first signal supply means coupled to said first and second differential amplifier means, for supplying said first signal to said first and second differential amplifier means;

load means coupled to at least either node of said first and fourth output terminals of said first and second differential amplifier means or the node of said second and third output terminals;

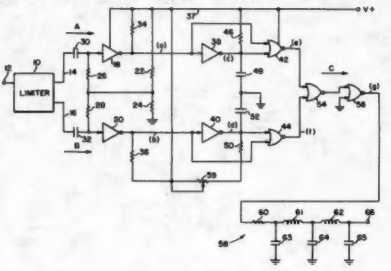
switching means for controlling the voltage of the bases of said first and second differential pairs of transistors in response to a second signal to selectively operate said first and second differential amplifier means, and for obtaining a product signal of said first and second signals from the node of said load means and said first and second differential amplifier means; and

second signal supply means coupled to said switching means for supplying said second signal to said switching means.

4,614,912
FM DEMODULATOR WITH TEMPERATURE COMPENSATION

Gregory O. Moberg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1985, Ser. No. 741,329
Int. Cl.[4] H03D *3/00*
U.S. Cl. 329—110 15 Claims



1. A demodulator circuit for processing a pair of oppositely-phased rectangular-wave signals derived from a frequency-modulated (fm) signal, said circuit comprising:

circuit means having a separate circuit path for processing each of said rectangular-wave signals, each circuit path including

(a) means for inverting a respective one of said rectangular-wave signals,

(b) means for delaying selected transitions of the inverted rectangular-wave signal said delaying means comprising voltage means for raising the output level of said inverting means to a predetermined level and means for providing a shunt capacitance which is charged by said voltge means in the course of raising said output level,

(c) means for generating a logic output from a combination of said respective rectangular-wave signal and said inverted rectangular-wave signal, said logic output comprising a stream of pulses which are generated whenever the levels of both signals of said combination of signals having a predetermined relationship relative to a logic threshold; and

means for combining the logic output pulse streams from said logic generating means in each circuit path to obtain a composite pulse signal having a pulse repetition rate that is twice the carrier frequency of the fm signal.

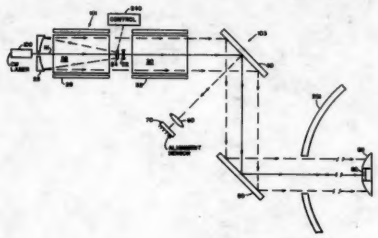
4,614,913
INHERENTLY BORESIGHTED LASER WEAPON ALIGNMENT SUBSYSTEM

Thomas E. Honeycutt, Sommerville, and Thomas G. Roberts, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 30, 1984, Ser. No. 605,544
Int. Cl.[4] H01S *3/00;* G01B *11/26*
U.S. Cl. 330—4.3 9 Claims

1. An inherently boresighted laser system comprising a lower powered laser means aligned along a desired optical path; a higher powered laser means aligned along the same optical path; first and second reflecting means aligned with said higher powered laser means; said first reflecting means having an orifice therein whereby a beam from said lower powered laser means can pass therethrough; and said second

reflecting means being switchable such that in a first state the beam from the lower powered laser will pass therethrough and



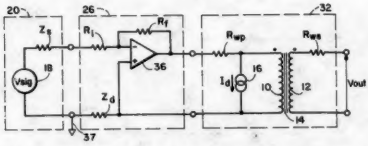
in a second state said reflecting means will reflect any laser beam back toward said first reflecting means.

4,614,914

LOW-DISTORTION TRANSFORMER-COUPLED CIRCUIT

Bruce E. Hofer, Beaverton, Oreg., assignor to Audio Precision, Inc., Beaverton, Oreg.

Filed Apr. 12, 1985, Ser. No. 722,812
Int. Cl.⁴ H03F *1/26*
U.S. Cl. 330—149 **13 Claims**



1. A circuit for coupling an electrical signal from a drive circuit through a transformer to a driven circuit, comprising:

(a) a transformer having an input port, an output port for providing an electrical signal to said driven circuit, and an input resistance at said input port; and

(b) amplifier means, having an input port for receiving an electrical signal from said drive circuit and an output port connected to said input port of said transformer, for producing a negative output resistance at said output port of said amplifier means that is substantially equal in magnitude to said input resistance of said transformer.

4,614,915

MONOLITHIC SERIES FEEDBACK LOW NOISE FET AMPLIFIER

David D. Heston, Dallas, and Randall E. Lehmann, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

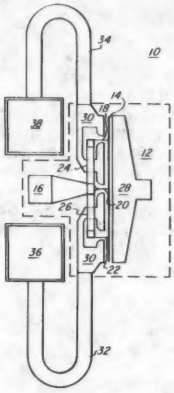
Filed Jan. 14, 1985, Ser. No. 691,606
Int. Cl.⁴ H03F *3/60*
U.S. Cl. 330—277 **8 Claims**

1. A low noise amplifier comprising a monolithic structure including:

a Field Effect Transistor, FET, having a drain, source and gate terminal;

an inductive series feedback means operatively connected between the source of the Field Effect transistor and ground, the inductive series feedback means having an inductance such that S_{11}^*, the conjugate of the input impedance of the FET with feedback, is approximately equal to Zopt, the optimum impedance for minimum noise figure of the FET with feedback, when the proper design impedance is present at the drain terminal;

an output circuit that presents the proper design impedance to the drain terminal; and



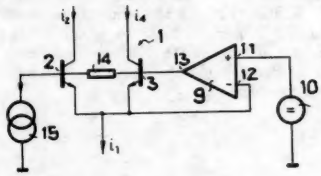
an input circuit at the gate terminal that matches to the input impedance at the gate terminal.

4,614,916

CIRCUIT FOR TRANSFORMING DIRECT-CURRENT SIGNALS

Heinz Rinderle, Heilbronn, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Aug. 2, 1984, Ser. No. 637,031
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329664
Int. Cl.⁴ H03F *3/04*
U.S. Cl. 330—289 **21 Claims**



1. A direct current transformer circuit for producing a temperature compensated direct-current output signal, comprising:

input means for communicating a direct-current input signal;

output means for communicating a direct-current output signal;

transformer means connected between said input and output means for receiving the direct-current input signal and for producing a direct-current output signal having a magnitude which is a function of the magnitude of the direct-current input signal and which is temperature dependent, said transformer means including two transistors connected to form a current mirror, each transistor developing a base to emitter voltage during operation of said transformer means, and voltage control means connected to at least one of said two transistors for regulating and setting a voltage difference between the base to emitter

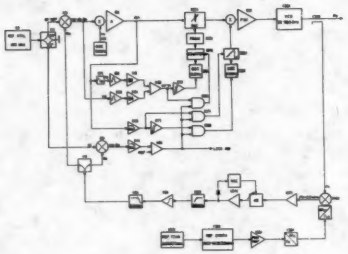
voltages of said two transistors for regulating and setting the magnitude of the direct current output signal to compensate for variations in current magnitude due to temperature and so that the direct-current output signal has a desired temperature characteristic.

4,614,917

MILLIMETER WAVE FREQUENCY SYNTHESIZER WITH AUTOMATIC LOOP GAIN CORRECTION AND SOPHISTICATED LOCK SEARCH SYSTEMS

Michael Zelitzki, Tel-Aviv, Israel, and Yekutiel Josefsberg, Lafayette, Calif., assignors to Tadiran Ltd., Givat Shmuel, Israel

Filed Apr. 17, 1985, Ser. No. 724,328
Claims priority, application Israel, May 1, 1984, 71718
Int. Cl.[4] H03L *7/06*
U.S. Cl. 331—1 A **20 Claims**



1. An indirect frequency synthesizer comprising a high performance frequency translation loop for operation in the microwave frequency range including a microwave voltage-controlled oscillator (VCO) operating at the output frequency, an automatic loop gain correction system and a lock search system, said frequency translation loop adapted to operate during variations of VCO parameters caused by interchanging of VCOs, frequency tuning and temperature and time variations, and said frequency translation loop utilizing the entire frequency tuning range of the microwave oscillator and with optimum output signal performance of low noise and spurious frequencies products.

4,614,918

FREQUENCY GENERATOR WITH DIGITALLY CONTROLLED PHASE MODULATION

Donald J. Adrian, Leucadia; Lawrence E. Christensen, La Jolla, and James C. Hanselman, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1980, Ser. No. 200,728
Int. Cl.[4] H03K *7/04*
U.S. Cl. 332—16 R **7 Claims**

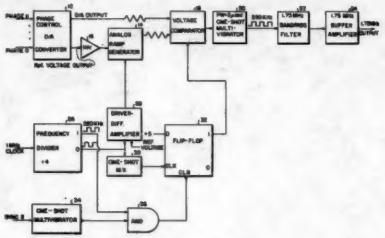
1. A frequency generator comprising:

first means for generating a repetitive wave having a predetermined rate of repetition;

second means having an input and an output, said output being connected to said first means for triggering said first means at a variable rate in response to a signal at its input;

third means having its output connected to the input of said second means for receiving a digital input signal and for generating an analog output signal in response thereto; and

means for disabling the output of said second means during a predetermined period of time when the amplitude of said



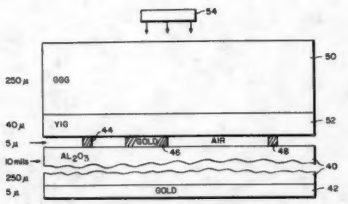
analog output signal varies by more than a predetermined amount.

4,614,919

MAGNETOSTATIC WAVE FREQUENCY ANALYZER APPARATUS

Robert E. Floyd, Acton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 3, 1984, Ser. No. 627,699
Int. Cl.[4] H03H *9/50, 9/70;* **H01P** *1/218*
U.S. Cl. 333—133 **10 Claims**



1. A magnetostatic wave frequency analyzer apparatus utilizing forward volume waves comprising in combination:

an alumina substrate with a non-magnetic ground plane disposed on the bottom surface thereof,

an input transducer disposed on the top surface of said alumina substrate, said input transducer comprising a non-magnetic material,

a plurality of output transducers remotely positioned on said top surface of said alumina substrate opposite said input transducer, said plurality of output transducers arranged in a substantially circular configuration with a predetermined number of degrees between adjacent output transducers,

a ground plane means positioned on the top surface of said substrate in close proximity to said input transducer, said ground plane means having a predetermined geometric configuration, said ground plane means having one side substantially parallel to said input transducer,

a substrate means positioned over and in close proximity to the top surface of said input transducer, said ground plane means, and said plurality of output transducers, said substrate means having a magnetic film deposited on its bottom surface in close proximity to said input transducers, said ground plane means and said plurality of output transducers, and,

a magnet means for generating a magnetic biasing H field, said magnetic biasing H field being applied perpendicularly to the plane of said input transducer, said ground plane means, and said plurality of output transducers, said

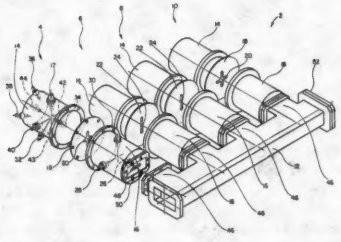
magnetic biasing H field having a predetermined bias strength.

4,614,920

WAVEGUIDE MANIFOLD COUPLED MULTIPLEXER WITH TRIPLE MODE FILTERS

Robert S. K. Tong, Kitchener, Canada, assignor to Com Dev Ltd., Cambridge, Canada

Filed Jan. 11, 1985, Ser. No. 690,741
Claims priority, application Canada, May 28, 1984, 4552849
Int. Cl.[4] H01P *5/12, 1/208*
U.S. Cl. 333—135 **12 Claims**



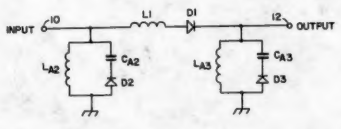
1. A multiplexer comprising a plurality of bandpass filters, each filter having an input and output, with said output being coupled through a T-junction to a waveguide manifold, at least one filter being a triple mode filter and having at least one cavity that resonates in a triple mode when said triple mode filter is operated in suitable propagation modes to produce an elliptic function response, said cavity having two end walls that are parallel to one another.

4,614,921

LOW PASS π SECTION DIGITAL PHASE SHIFTER APPARATUS

Binboga S. Yarman, Cengelköy/Istanbul, Turkey, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 20, 1985, Ser. No. 767,446
Int. Cl.[4] H03H *7/20;* **H01P** *1/185*
U.S. Cl. 333—139 **8 Claims**



1. A low pass π section digital phase shifter apparatus comprising in combination:

a first inductor means having a first and second lead said first lead of said first inductor means forming an input terminal for an input signal,

a first diode means having a first and second lead, said first lead of said first diode means connected to said second lead of said first inductor means, said first diode means having a first and second state, said second lead of said first diode means forming an output terminal,

a first shunt circuit comprising a second inductor means in parallel with first capacitor means which is in series with a second diode means, one end of said second inductor means connected to one end of said first capacitor means to form a first junction, said first junction connected to said input terminal, the other end of said second inductor means connected to one end of said second diode means to form a second junction, said second junction connected to ground, said second diode means having a first and second state, and,

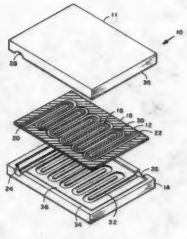
a second shunt circuit comprising a third inductor means in parallel with second capacitor means which is in series with a third diode means, one end of said third inductor means connected to one end of said second capacitor means to form a third junction, said third junction connected to said output terminal, the other end of said third inductor means connected to one end of said third diode means to form a fourth junction, said fourth junction connected to ground, said third diode means having a first and second state.

4,614,922

COMPACT DELAY LINE

Ralph E. Bauman, Londonderry, and Horace W. Seymour, III, Manchester, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 5, 1984, Ser. No. 658,006
Int. Cl.[4] H01P *9/00, 3/08*
U.S. Cl. 333—161 **28 Claims**



1. A transmission delay line comprising:

(a) a non-conductive center board on which a conductive meandering transmission strip is arranged in a pattern defining a uniform width transmission path for electromagnetic energy,

(b) an upper housing, having a conductive surface shaped to form a channel, and

(c) a lower housing, having a conductive surfaces shaped to form a channel,

said channels being shaped such that together the channels form a uniform cavity that surrounds said transmission strip along a transmission path between a pair of input-/output ports and wherein said conductive surfaces of said housings are each electrically connected to the other at a plurality of first locations adjacent to said channels such that a substantially complete electromagnetic shield is formed around said transmission path.

4,614,923

METHOD OF SUPPRESSING MAGNETOSTATIC WAVES IN MAGNETIC GARNET FILMS FOR MICROWAVE CIRCUIT APPLICATIONS

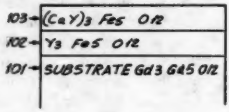
Riccardo Roveda, Rome; Carlo Di Gregorio, Grottaferrata; Paolo De Gasperis, and Giuseppe Miccoli, both of Rome, all of Italy, assignors to Selenia Industrie Elettroniche Associate SpA and I.E.S.S. C.N.R., both of Rome, Italy

Filed Feb. 21, 1985, Ser. No. 704,073
Claims priority, application Italy, Feb. 21, 1984, 47733 A/84
Int. Cl.[4] H03H *9/00;* **H01P** *3/00*
U.S. Cl. 333—147 **12 Claims**

7. A microwave signal processing device for the controlled suppression of magnetostatic waves in magnetic garnet films consisting of, in contacting relationship:

a passive dielectric substrate;

at least one epitaxial layer of low loss Yttrium-Iron Garnet film; and



at least one epitaxial layer of high magnetic loss Calcium-Yttrium-Iron Garnet film.

4,614,924

APPARATUS FOR SCREENING APPLIANCES FROM HIGH FREQUENCY INTERFERENCE

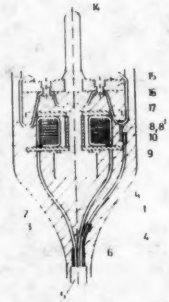
Herbert Kamitz, Mödling, and Franz Simon, Schwarzau, both of Austria, assignors to Josef Feller Gesellschaft m.b.H., Gunselsdorf, Austria

Filed Feb. 23, 1983, Ser. No. 468,926

Claims priority, application Austria, Feb. 25, 1982, 717/82

Int. Cl.⁴ H03H *7/01, 7/09*

U.S. Cl. 333—167 **2 Claims**



1. Apparatus for screening an electrical appliance from electrical supply borne high frequency interference, the apparatus comprising:

a plug connector for insertion in an outlet connected to the main electric supply attached to one end of an electric cord, the other end thereof being connectable to the appliance;

an interference filter that comprises at least one induction coil and a capacitor and that is incorporated in the plug; and

capacitance means for suppressing asymmetrical interference between a neutral conductor and a phase conductor of the electric cord on the one hand, and a protective ground conductor thereof on the other hand, the capacitance means comprising a screen of sheathing for the conductors of said electric cord, the screen being connected to the protective ground conductor.

4,614,925

RESONATOR FILTERS ON DIELECTRIC SUBSTRATES

Johji Kane, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1984, Ser. No. 627,727

Claims priority, application Japan, Jul. 5, 1983, 58-123074; Aug. 1, 1983, 58-141354; Aug. 1, 1983, 58-141355; Aug. 2, 1983, 58-141541; Aug. 4, 1983, 58-143259

Int. Cl.⁴ H03H *7/01*

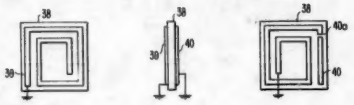
U.S. Cl. 333—174 **23 Claims**

1. A resonator filter comprising:

a dielectric; and

a pair of first and second electrodes electrically confronting each other through said dielectric, each of said first and second electrodes having at least one bent portion to present primarily a lumped-constant inductance and having a desired equivalent electrical length,

said first and second electrodes having ground or common terminals located out of mutually confronting positions so that voltage signals induced by mutual induction between said electrodes will be opposite in phase with respect to each other, thereby producing a parasitic distributed-constant capacitance due to a potential difference between



said electrodes and a dielectric constant of said dielectric; and

said first electrode having a first terminal at a desired position thereof so that said electrodes form a two-terminal circuit network having said first terminal with said ground or common terminals serving as a second terminal, said two-terminal circuit network forming an equivalent parallel resonant bandpass filter circuit composed of a lumped-constant inductor formed by said first electrode and a parasitic distributed-constant capacitor between said first and second electrodes.

4,614,926

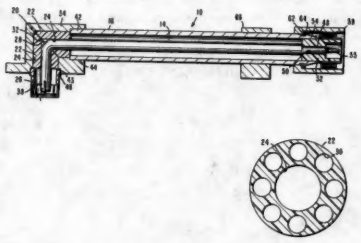
HIGH-POWER COAXIAL CABLE

Elmer E. Reed, and Arthur E. Manoly, both of Palos Verdes Peninsula, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 6, 1985, Ser. No. 698,956

Int. Cl.⁴ H01P *1/102*

U.S. Cl. 333—244 **3 Claims**



1. A high-power coaxial cable comprising:

an elongated inner conductor having an approximately 90° bend near one end and a reduced diameter portion at the other end;

a tubular outer conductor coaxially disposed about and spaced from said inner conductor such that a predetermined characteristic impedance is provided;

a first insulating fitting defining an approximately 90° bend and a center hole therethrough for receiving said approximately 90° bend of said inner conductor such that said one end of said inner conductor protrudes beyond said first insulating fitting, said first insulating fitting further defining a plurality of longitudinal holes therethrough radially outwardly from said center hole;

an electrically conductive sleeve for receiving said one end of said inner conductor;

a mounting block disposed about said first insulating fitting, said electrically conductive sleeve and one end of said

outer conductor each being press-fit into opposite ends of said mounting block;

a second insulating fitting defining an axial hole for receiving said reduced diameter portion of said inner conductor; and

a housing coaxially disposed about the end region of said outer conductor surrounding said second insulating fitting and said reduced diameter portion of said inner conductor.

4,614,927

POLARIZED ELECTROMAGNETIC RELAY

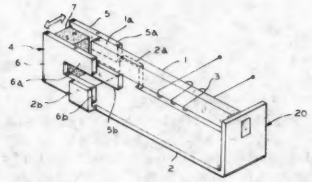
Nobuo Mikami; Yuichi Kamo, and Katsuto Kojima, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 18, 1985, Ser. No. 756,358

Claims priority, application Japan, Jul. 20, 1984, 59-150581; Jan. 21, 1985, 60-8614

Int. Cl.[4] H01F *7/08*

U.S. Cl. 335—78 **13 Claims**



1. A polarized electromagnetic relay comprising:

a movable block including first and second U-shaped magnetic plates, each of which has first and second ends, said plates being fixed on individually associated and opposite poles of a permanent magnet to set said first and second ends of said first magnetic plate opposite said first and second ends of said second magnetic plate, respectively;

an electromagnetic block including

a core having one end thereof placed between said first end of said first magnetic plate and said first end of said second magnetic plate of said movable block;

a yoke magnetically connected to said core, said yoke having a fork on one end thereof, the ends of said fork being placed outside each of said second ends of said first and second magnetic plates in said movable blocks;

a spool having a center hole through which said core extends, a guide for supporting said movable block in a manner to enable it to move in a direction which is parallel to the magnetic axis of said permanent magnet, and a coil wound around said spool;

a base for fixing said electromagnetic block, said base having at least one set of contact members mounted thereon; and

a card for supporting said movable block and actuating said contact members responsive to the translation of said movable block parallel to the magnetic axis of the permanent magnet.

4,614,928

AUTOMATIC SWITCH WITH AN ARC BLAST FIELD

Joseph Westermeyer, Nuremberg, Fed. Rep. of Germany, assignor to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,012

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339399

Int. Cl.[4] H01H *9/30, 33/18*

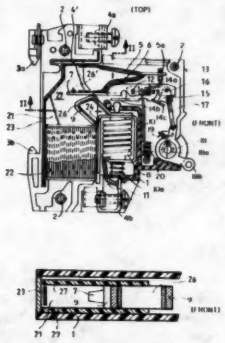
U.S. Cl. 335—201 **5 Claims**

1. An automatic switch with an arc blowing field, comprising:

a rotatably mounted switch arm bearing a moving contact piece; said switch arm cooperating with fixed contact piece; said fixed contact piece being disposed on a cross-piece of a U-shaped curved contact strip;

said contact strip forming a loop; one end of said contact strip being connected to an electrical circuit and the other end of said contact strip being free;

said contact strip forming a diversion horn and being associated with a group of deionization plates which are in electrical communication with at least one arc-conducting plate; a return plate of a tripping solenoid supporting said



fixed contact piece; said contact strip extending across a spaced width between two ceramic insulating discs;

a ferromagnetic plate strip being attached to said contact strip on a side of said contact strip facing away from said contact piece; and said ferromagnetic plate strip being disposed entirely in said loop of said contact strip.

4,614,929

METHOD FOR MANUFACTURE OF MAGNET

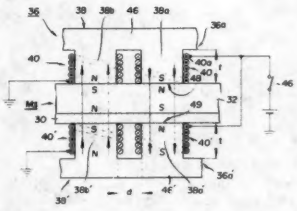
Takaaki Tsukuda; Toyohiko Hata, both of Sano, and Akira Fujisaki, Tanuma, all of Japan, assignors to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,501

Claims priority, application Japan, Mar. 30, 1984, 59-61162

Int. Cl.[4] H01F *13/00*

U.S. Cl. 335—284 **4 Claims**



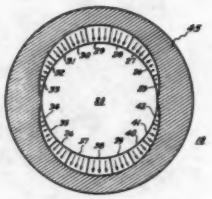
1. A method for the manufacture of an annular magnet, which comprises depositing, on the opposite sides of an annular material of magnetic substance, magnetizing members regularly spaced circumferentially in conformity with the shape of said annular material and opposed perpendicularly to each other across said annular material and forming magnetic fluxes through paired magnetizing members in alternately opposite directions thereby magnetizing said interposed annular material.

4,614,930

RADIALLY MAGNETIZED CYLINDRICAL MAGNET

John S. Hickey, Burnt Hills, and Peter B. Roemer, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 25, 1985, Ser. No. 715,709
Int. Cl.[4] H01F 7/02
U.S. Cl. 335—302 13 Claims



1. A permanent magnet assembly for providing a region of substantially uniform flux density, said assembly comprising:

a plurality of permanent magnet segments of substantially constant magnetizing force M_r circumferentially enclosing a bore with a central longitudinal axis, said bore including said region, and each of said magnet segments being magnetized in a direction substantially normal to the portion of said bore enclosed by each respective magnet segment; and

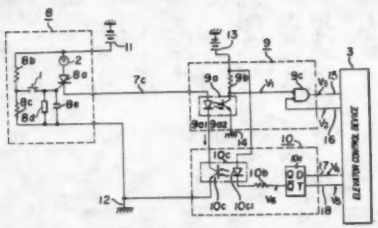
a flux return path radially enclosing said permanent magnet segments.

4,614,931

CALL SIGNAL CONVERSION APPARATUS FOR ELEVATOR SYSTEM

Isao Sasao, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1982, Ser. No. 359,859
Claims priority, application Japan, Jun. 11, 1981, 56-89816
Int. Cl.[4] G08B 5/36
U.S. Cl. 340—19 R 4 Claims



1. An elevator system, comprising:

a call device containing a call button for producing a call signal and a call registration lamp in one unit;

a control device for receiving an indication of when a call signal is to be effective and for receiving said call signal when effective;

a conversion apparatus connected between said call device and said control device for receiving an effectiveness signal from said control device indicating whether said call signal is to be effective and said call signal from said call device and for sending to said control device said call signal when effective;

said conversion apparatus including a call signal detecting circuit for receiving said call signal, a memory circuit for receiving said effectiveness signal and storing said signal and, a driving circuit for detecting the presence of said stored signal in said memory circuit; and

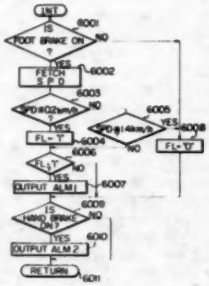
said call device further including a thyristor, the anode of said thyristor being connected to one side of said call registration lamp, the other side of said call registration lamp being connected to a power source, the cathode of said thyristor being connected to said conversion apparatus, the gate of said thyristor being connected to one side of said call button, the other side of said call button being connected to a circuit for feeding a gate current to said thyristor.

4,614,932

ALARM SYSTEM FOR THE UNEXPECTED RELEASE OF A BRAKE IN A VEHICLE

Muneaki Matsumoto, and Sukeyasu Kanno, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 14, 1983, Ser. No. 551,690
Claims priority, application Japan, Nov. 17, 1982, 57-202508; Dec. 26, 1982, 57-228566
Int. Cl.[4] B60Q 1/00, 1/44
U.S. Cl. 340—52 B 3 Claims



1. An alarm system for the insufficient braking effect by a foot brake associated with a brake switch in a vehicle, comprising:

means for detecting the state of the foot brake from the brake switch and for generating a brake signal when the brake switch is turned on;

means for detecting the speed of the vehicle and for generating a vehicle speed pulse signal having a frequency proportional to the speed of the vehicle;

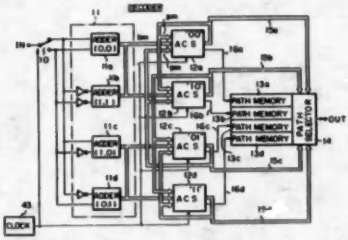
means for detecting the stationary state of the vehicle, in accordance with the vehicle speed pulse signal, and for generating a vehicle stationary signal from the time when the speed of the vehicle becomes lower than a first value to the time when the speed of the vehicle becomes higher than a second value which is larger than the first value; and

means for generating an alarm in response to each pulse of the vehicle speed pulse signal, when said brake signal is generated by the foot brake state detecting means and said vehicle stationary signal is generated by the vehicle stationary state detecting means.

4,614,933
VITERBI DECODER WITH THE PIPELINE PROCESSING FUNCTION

Atsushi Yamashita; Tadayoshi Katoh, both of Kawasaki, and Hiroshi Kurihara, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 14, 1985, Ser. No. 701,504
Claims priority, application Japan, Feb. 20, 1984, 59-028488
Int. Cl.[4] H03K *13/24*
U.S. Cl. 340—347 DD **6 Claims**



2. A Viterbi decoder with a pipeline processing function for decoding received code sequences each comprising code units and being transferred from an encoder having a plurality of states, comprising:

clock signal generator means for generating a clock signal having predetermined clock cycle periods;

first correlation determing circuit means for obtaining, during each of said clock cycle periods, a plurality of first correlations (bm) between a unit of a received code sequence and a plurality of fixed units of predetermined code sequences, each fixed unit corresponding to a predetermined path from one state to a subsequent state of said encoder when said encoder generates one of said predetermined code sequences;

second correlation determining means for obtaining, during each of said clock cycle periods, a plurality of second correlations (pm), each of said correlations being determined based on a corresponding one of said first correlations and at least two previously calculated second correlations, said previously calculated second correlations being calculated during a clock cycle period immediately preceeding the current clock cycle period; and

first selecting means for selecting one of said predetermined code sequences, said selected predetermined code sequence having the maximum correlation of said plurality of second correlations, and for obtaining a decoded code sequence from said selected code sequence; wherein each of said second correlation determining includes

comparing means for comparing, during each of said clock cycle periods, said previously calculated second correlations and for providing path selecting data, said path selecting data corresponding to the maximum correlation of said previously calculated second correlations, and being applied to said first selecting means, such that said first selecting means selects one of said predetermined code sequences in response to said path selecting data; adding means for adding, during each of said clock cycle periods, one of said first correlations (bm) to one of said previously calculated second correlations and for generating a new second correlation in accordance with the addition;

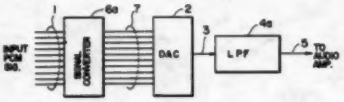
second selecting means for selecting, in response to said path selecting data, one of said new second correlations, the selected new second correlation having the maximum correlation of said second correlations; and

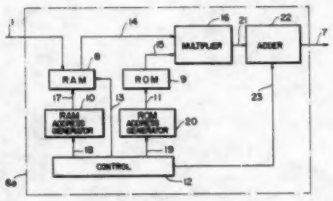
updating means for updating said previously calculated second correlations in accordance with said selected new second correlations and during a clock cycle period subsequent to the clock cycle period during which said previously calculated second correlations are compared simultaneously with the addition of said first correlations to said previously calculated second correlations.

4,614,934
DIGITAL-TO-ANALOG CONVERTER DEVICE FOR PROCESSING PCM SIGNALS OF DIFFERENT SAMPLING FREQUENCIES

Masaharu Kobayashi; Takaharu Noguchi, both of Yokohama; Keizo Nishimura, Yokosuka; Hiromichi Tanaka, Yokohama; Masami Nishida, Yokohama, and Takao Arai, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 578,787
Claims priority, application Japan, Mar. 14, 1983, 58-40658
Int. Cl.[4] H03M *1/66*
U.S. Cl. 40—347 DA **10 Claims**





1. A digital-to-analog converter device for processing PCM signals having different sampling frequencies, comprising:

a signal converter coupled to receive and identify one at a time in a time series a plurality of input PCM signals having different sampling frequencies, including means for converting at least a lowermost one of the sampling frequencies of the plurality of input PCM signals into a higher frequency equal to or greater than the uppermost sampling frequency of said input PCM signals and passing only signal bands of the input PCM signals and their side bands relative to the higher sampling frequency;

a digital-to-analog converter connected to receive output PCM signals from said signal converter, for converting them into analog signals; and

a low-pass filter coupled to receive the analog signals from said digital-to-analog converter, including means for passing only signal bands of the analog signals and for blocking the side bands thereof.

4,614,935
LOG AND ANTILOG FUNCTIONS FOR VIDEO BASEBAND PROCESSING

Russell T. Fling, Noblesville, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 24, 1984, Ser. No. 685,679
Int. Cl.[4] H03M *5/00*
U.S. Cl. 340—347 DD **23 Claims**

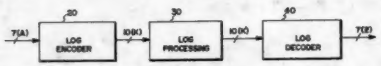
1. A digital signal processing apparatus for encoding n-bit binary input samples to produce m+1 bit binary output samples representative of a given logarithmic function of said input samples; each of said binary input samples being represented by n binary bits arranged in order of significance from a least

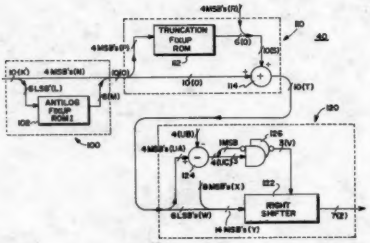
significant bit position to a most significant bit position; each of said binary output samples being represented by m+1 binary bits arranged in order of significance from a least significant bit position to a most significant bit position; each of said bits exhibiting first and second states representing logical one's and logical zero's respectively; said encoding apparatus comprising:

(A) an input terminal for applying said n-bit binary input samples;

(B) means, coupled to said input terminal, for determining the bit position of highest significance exhibiting a logical one state in the respective one of said input samples to produce at an output thereof a first set of binary numbers corresponding to said bit position of highest significance;

(C) selectively-actuated means, coupled to said bit position determining means, for adding a fixed binary value to said





first set of numbers when said input samples are non-zero to produce a second set of binary numbers corresponding to the m most significant bits of said m+1 bit output samples;

(D) means including means, coupled to said input terminal, for generating a third set of binary numbers corresponding to the bits of lesser significance than said bit position of highest significance in said input samples; said third set of binary numbers corresponding to the l least significant bits of said m+1 bit output samples; and

(E) means, coupled to said selectively-actuated means and to said means for generating said third set of binary numbers, for concatenating said second and third sets of binary numbers to produce said m+1 bit output samples representing alog-linear approximation of said given logarithmic function.

4,614,936

METHOD AND ARRANGEMENT FOR INTERPOLATIVE A/D CONVERSION

Hans U. Weidenbruch, Wedemark, and Hans G. Musmann, Salzgitter-Bad, both of Fed. Rep. of Germany, assignors to Ant Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Mar. 21, 1984, Ser. No. 591,950

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1983, 3310310

Int. Cl.[4] H03M *1/00*

U.S. Cl. 340—347 AD **7 Claims**

1. Method for the interpolative conversiom of an analog input signal to a digital output signal comprising:

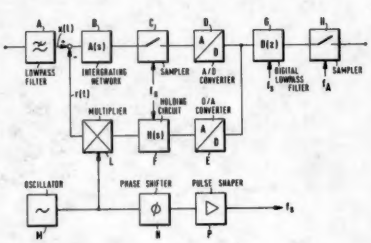
forming an intermediate signal from the input signal;

integrating the intermediate signal;

sampling the integrated intermediate signal at a sampling frequency which is a multiple of the Nyquist frequency to form a sampled signal;

quantizing the sampled signal with an amplitude resolution corresponding to one bit to form a quantized signal;

forming a feedback signal from the quantized signal, the feedback signal comprising pulses each of which returns to a zero within a time interval equal to one period of the sampling frequency;



combining the feedback signal with the input signal to form the intermediate signal;

passing the quantized signal through a digital lowpass filter; and

sampling the output of the digital lowpass filter to produce a PCM signal, the PCM signal constituting the digital output signal.

4,614,937

CAPACITIVE KEYBOARD STRUCTURE

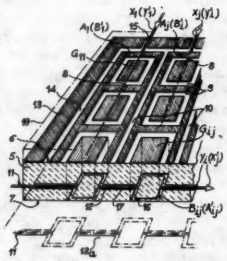
Robert Poujois, Sinard, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 12, 1983, Ser. No. 457,439

Claims priority, application France, Jan. 29, 1982, 82 01445

Int. Cl.[4] G06F *3/02*

U.S. Cl. 340—365 C **11 Claims**

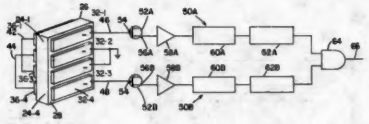


1. A capacitive keyboard structure comprising a substrate having an upper face which is positioned for access by a user and having a lower face, a series of static sensitive keys disposed on the upper face, each key being associated with a first and a second electrode, one of said electrodes being an emitting electrode which is excited sequentially by an alternating signal delivered by an emitting line connected to said emitting electrode, and the other of said electrodes being a receiving electrode which is coupled capacitively to the emitting electrode by the associated static sensitive key and which impresses on a receiving line connected to the receiving electrode variations of the alternating signal as an effect of the presence of a user's finger in the vicinity of such static sensitive key, the first electrode being formed to enclose on the upper face its associated key, and the second electrode being disposed on the lower face below the associated key.

4,614,938
DUAL CHANNEL PYROELECTRIC INTRUSION DETECTOR

Irwin Weitman, East Northport, N.Y., assignor to Pittway Corporation, Syosset, N.Y.

Filed May 21, 1984, Ser. No. 612,594
Int. Cl.[4] G08B 13/18
U.S. Cl. 340—567 20 Claims

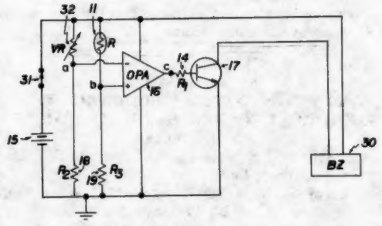


1. An intrusion detection system comprising
a member of pyroelectric material,
a plurality of infrared radiation sensitive elements, each said element comprising first and second spaced electrodes between which a portion of said member of pyroelectric material is positioned, each said element being operative to produce a voltage proportional to the rate of change of infrared radiation incident thereon,
said elements being closely spaced to one another (the spacing being less than the width of the elements) so that the regions under surveillance are essentially fully covered,
the pyroelectric material portion of each element being polariazed,
first and second amplifier channels,
means connecting one group of said polarized elements to said first amplifier channel, means connecting another similar group of said polarized elements to said second amplifier channel, and coincidence means for producing an alarm output in response to concurrent intruder signal generation by both of said channels.

4,614,939
METHOD AND DEVICE FOR DETECTION OF A BLANKET OR THE LIKE BEING KICKED OFF THE BODY OF A SLEEPING PERSON

Chun-Jong Wang, No. 9, Lane 312, Min Sheng N. Rd., Tao Yan City, Taiwan

Filed Apr. 9, 1984, Ser. No. 598,029
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—573 7 Claims

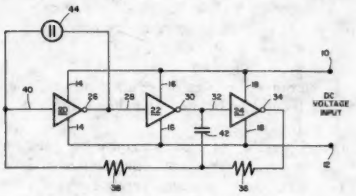


1. A device for detection of a blanket or the like being improperly positioned on a sleeping person, said device comprising in combination:
a light-sensing means for generating an output signal in response to a light source and including at least a light-responsive photocell;
a signal amplifier operatively connected to said light-sensing means for receiving and amplifying said output signal; and
an alarm connected to said amplifier for producing a warning signal in response to the amplified output signal.

4,614,940
MICROPOWER DC VOLTAGE INDICATOR

Thomas H. Jaeckle, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Oct. 21, 1985, Ser. No. 790,613
Int. Cl.[4] G08B 21/00; G09G 3/18; H03B 5/12
U.S. Cl. 340—636 5 Claims

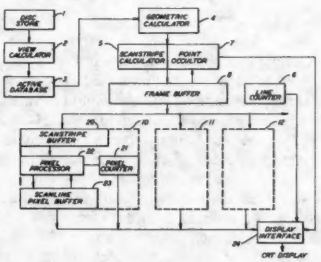


1. A micropower DC voltage indicator for measuring a wide range of DC voltages and giving a visual indication if a DC voltage is present, said voltage indicator drawing minute amounts of power which is important for battery operated equipment, said voltage indicator comprising:
a single pair of terminals for connection to a source of said DC voltage;
oscillator means connected to said DC voltage through said single pair of terminals for oscillating if said DC voltages within said wide range is present, said oscillator means having a very high input impedance; and
a liquid crystal display driven by said oscillator means, said liquid crystal display giving said visual indication if said DC voltages within said wide range are present at said single pair of terminals and no visual indication if said DC voltages within said wide range are not present at said single pair of terminals.

4,614,941
RASTER-SCAN/CALLIGRAPHIC COMBINED DISPLAY SYSTEM FOR HIGH SPEED PROCESSING OF FLIGHT SIMULATION DATA

Kevin M. Jarvis, Lancing, England, assignor to The Singer Company, Binghamton, N.Y.

Filed Jul. 18, 1983, Ser. No. 514,419
Claims priority, application United Kingdom, Oct. 10, 1982, 8230911
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—747 1 Claim



1. In a reater-scan/calligraphic combined display system for high speed processing of flight simulation data, the combination comprising:
(a) geometric calculator means for determining projected geometric positions of scene features to be displayed;
(b) memory means for storing image data and accessable directly by said geometric calculator means;

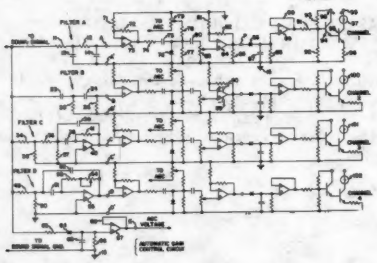
(c) WRITE ADDRESS buffer circuit means for supplying an address to said image data;
(d) input data bus means for connecting said image data from said geometric calculator means to said WRITE ADDRESS buffer circuit means;
(e) scanline data memory means connected to said input data bus means to hold, for each surface to be displayed, the details of each raster scanline representing such surface;
(f) surface pointer memory means connected to said input data bus means for holding a START ADDRESS in each scanline for such surface;
(g) a plurality of processor means to process said image data to build up a set of intensity values for successive scanlines of a display;
(h) said plurality of processor means connected in parallel for receiving, in rotation, one scanline of data;
(i) buffer means connected with each of said processor means for receiving and storing temporarily data defining the intensity value of a plurality of pixels within a scanline; and
(j) pixel processor means for writing said intensity values into locations in said buffer means corresponding to said image data.

4,614,942

VISUAL SOUND DEVICE

Bernard J. Molinaro, 274 Elm St., Monroe, Conn. 06468

Filed Sep. 19, 1983, Ser. No. 533,151
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—815.11 **11 Claims**



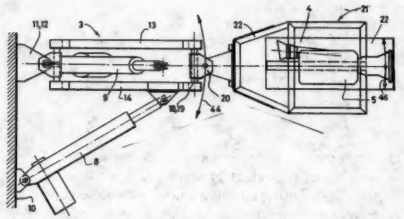
1. A visual sound device for use in the visual interpretation of a received electrical sound signal containing at least one channel that responds visually in amplitude variations with the amplitude variations of the intelligence contained within a band of frequencies of the said received electrical sound signal, said channel consisting of a filter means having its input adapted to receive a source of the said received electrical sound signal and the said filter means in response thereto passes the intelligence, contained within a band of frequencies of the said received electrical sound signal, to the input of a power amplifying converting means which converts the said passed intelligence into a power amplified varying amplitude form of sufficient power and includes means for operating an electro visual means which is connected at the output thereof, throughout its operable brightness range in correspondence with the range of said amplitude variations, thereby converting the said received electrical sound signal into a visual amplitude varying output that follows the amplitude variations of the said passed intelligence.

4,614,943

DEVICE FOR THE REMOTE CONTROL OF THE POSITION OF A MOBILE SUPPORT

Gilles Boucher, 79 rue des Chantiers, 78000 Versailles, France, assignor to Gilles Boucher, Paris, France

Filed Jul. 7, 1983, Ser. No. 511,517
Claims priority, application France, Jul. 15, 1982, 82 12346
Int. Cl.[4] G03B *39/00*
U.S. Cl. 340—825.00 **11 Claims**



1. A device for remotely controlling the position and orientation of a target following element borne by a vehicle, comprising:
a first support member including two arms and an intermediary bracket, said arms having first ends pivotally mounted in a substantially vertical plane to said vehicle for movement in said substantially vertical plane and about said substantially vertical plane, and opposite, second ends pivotally secured to said intermediary bracket to form a pivoting parallelogram structure, with said intermediary bracket always remaining in a substantially upright position during said movement of said arms;
said first support member including a parallelogram jack pivotally secured between a substantially fixed point of the parallelogram structure and one of said arms for pivoting said arms in said substantially vertical plane;
said first support member including a rotation jack pivotally secured between a fixed point of the vehicle and at least one of said arms for rotating said arms about said substantially vertical plane;
a second support member secured to the intermediary bracket for bearing the target following element and including orientation motors for orienting said target following element in inclination and azimuth relative to said first intermediary bracket; and
remote control means provided within the vehicle for controlling the parallelogram and rotation jacks of said first support member and the orientation motors of said second support member, to cause the target following element to follow a travelling mobile unit.

4,614,944

TELEMETRY SYSTEM FOR DISTRIBUTED EQUIPMENT CONTROLS AND EQUIPMENT MONITORS

Herbert A. Schwan, Encinitas, Calif., assignor to Teleplex Corporation, San Diego, Calif.

Continuation of Ser. No. 428,545, Sep. 30, 1982, abandoned. This application Jul. 24, 1985, Ser. No. 758,565
Int. Cl.[4] H04Q *9/00*
U.S. Cl. 340—825.06 **21 Claims**

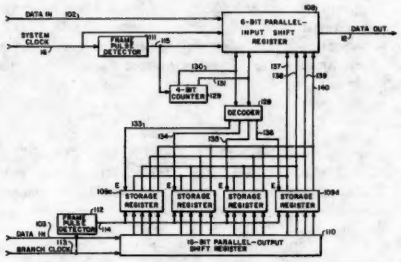
1. A telemetry system for a plurality of distributed equipment controls and a plurality of distributed equipment monitors, comprising
an output channel for communicating control signals to said distributed equipment controls, including
a first block of register stags for receiving in given register stags of the first block from a controller a set of control signals that are intended for respective distributed equipment controls; and

a second block of distributed, parallel-output register stages connected in series with each other and with the first block by an output data line for receiving said control signals in series from the first block, and respectively positioned at said equipment controls for providing said control signals to the intended respective equipment controls; and

an input channel for communicating monitored signals from said distributed equipment monitors, including

a third block of distributed, parallel-input register stags connected in series with each other by an input data line and respectively positioned at said equipment monitors for connection to said equipment monitors for receiving in given register stages of the third block from said respective equipment monitors a set of monitored signals that are intended for respective stages of a fourth block of register stages; and

a fourth block of register stages connected in series with the third block of register stages by the input data line for receiving said monitored signals in said intended register stages of the fourth block in series from the respective given register stages of the third block; and



a clock signal generator for generating a clock signal consisting of a series of clock pulses and a frame pulse for defining each frame of the clock signal;

wherein the first block and each stage of the second block are connected to the clock signal generator for receiving the clock signal and are responsive solely to the clock signal for transferring each set of control signals from the given register stages of the first block to the respectively positioned register stages of the second block and for transferring each set of control signals from the stages of the second block to the respective intended equipment controls; and

wherein the fourth block and each stage of the third block are connected to the clock signal generator for receiving the clock signal and are responsive solely to the clock signal for transferring to the respective intended register stages of the fourth block each set of monitored signals received from the equipment monitors by the respectively positioned given register stages of the third block and for transferring each set of monitored signals from the respective equipment monitors to the stages of the third block.

4,614,945

AUTOMATIC/REMOTE RF INSTRUMENT READING METHOD AND APPARATUS

Robert E. Brunius, and Jon R. Nelson, both of St. Paul, Minn., assignors to Diversified Energies, Inc., Minneapolis, Minn.

Filed Feb. 20, 1985, Ser. No. 703,621
Int. Cl.[4] G08C *17/00*
U.S. Cl. 340—870.03 **64 Claims**

18. An automatic/remote instrument monitoring system for monitoring a plurality of instruments and for simultaneously transmitting data from the monitored instruments when energized by an RF wake-up signal to a remotely located interrogate receiver means, comprising:

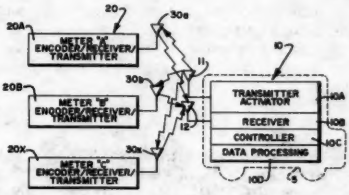
(a) interrogate transmitter means for providing an RF wake-up signal, for initiating simultaneous readout from a plurality of remotely located RF transponders;

(b) a plurality of RF transponders each configured for operative connection with at least one of the instruments to be monitored, each transponder comprising:

(i) data collection means operatively connected to collect parameter data from at least one of said instruments being monitored;

(ii) transponder receiver means for receiving said RF wake-up signal and for enabling and initiating transmission of said collected parameter data from said transponder in response thereto;

(iii) transponder transmitter means operatively connected with said data collection means and said transponder receiver means for transmitting an RF transponder



signal to an interrogate receiver, said RF transponder signal being characterized by active time and frequency parameters and comprising a plurality of RF transmission bursts, each containing said collected parameter data; and

(iv) means operatively connected with said transponder transmitter for determining at least one of said active parameters of said RF transponder signal in a manner such that the RF transponder signal of each said transponder differs from that of other said transponders in a manner that enables said plurality of RF transponder signals to be distinguished from one another during simultaneous transmissions by said plurality of transponders; and

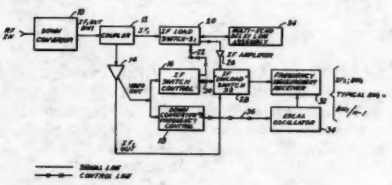
(c) interrogate receiver means remotely located from said transponders and cooperatively operable with said interrogate transmitter means for receiving and processing said plurality of simultaneously transmitted RF transponder signals from said remotely located transponders.

4,614,946

RF RECEIVER UTILIZING A MULTIPLE ECHO DELAY LINE

Dov A. Kaminetzky, Plainview, N.Y., assignor to General Instrument Corporation, New York, N.Y.

Filed Mar. 25, 1983, Ser. No. 478,898
Int. Cl.[4] G01S *7/30*
U.S. Cl. 343—18 E **4 Claims**



1. An rf receiver comprising an input port, a signal-process-

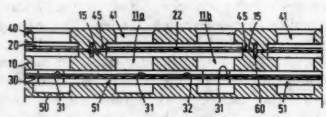
ing receiver, a multiple echo delay line having an input and having the characteristic of producing in response to a pulse at its input a series of time-spaced pulses at decreasing amplitudes, said multiple echo delay line being normally operatively connected to said input port, means for detecting an input rf event switching means effective when in a first state to connect the input of said multiple echo delay line to said input port and when in a second state in response to the detection of an input rf event to operatively connect said multiple echo delay line to the input of said said signal-processing receiver, said switching means comprising a first switch effective when in an "on" condition to operatively connect said multiple echo delay line to said input port, and a second switch effective when in an "on" condition to operatively connect said multiple echo delay line to the input of said signal-processing receiver, and a switch control operatively connected to and providing control signals to said first and second switches, said means for detecting an input rf event comprising means for providing output video and i.f. signals corresponding to the input rf event, said output video signal being applied to said switching means for actuating the latter, said output i.f. signal being applied to one input of said second switch, a second input of said second switch being operatively connected to the input of said multiple echo delay line.

4,614,947

PLANAR HIGH-FREQUENCY ANTENNA HAVING A NETWORK OF FULLY SUSPENDED-SUBSTRATE MICROSTRIP TRANSMISSION LINES

Emmanuel Rammos, Creteil, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1984, Ser. No. 601,518
Claims priority, application France, Apr. 22, 1983, 83 06650
Int. Cl.[4] H01Q *1/38, 13/08*
U.S. Cl. 343—778 **7 Claims**



1. A planar high-frequency antenna including at least two facing conductive plates having corresponding openings which cooperate to form respective cavities, and a relatively thin dielectric sheet disposed between the conductive plates and supporting an array of strip conductors which cooperate with the conductive plates to form suspended-substrate microstrip lines and which have ends extending into respective ones of the cavities,

characterized in that the conductive plates are spaced from the dielectric sheet and the supported strip conductors by pairs of first and second spacers arranged on opposite sides of the dielectric sheet, each pair of spacers clamping the dielectric sheet therebetween in areas where no strip conductors are located, said pairs of spacers being sufficiently separated from each other such that at least two of said cavities and/or strip conductors are located between any two pairs.

4,614,948

INK CIRCULATION SYSTEM FOR CONTINUOUS INK JET PRINTING APPARATUS

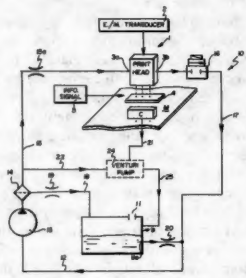
James A. Katerberg, Kettering; Evan L. Craig, Huber Heights, and David A. Huliba, Centerville, all of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1985, Ser. No. 722,550
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—75 **27 Claims**

1. In continuous ink jet printing apparatus of the type having a print head for producing ink droplets, a droplet catcher and an ink circulation system including an ink supply reservoir, an ink pump and ink conduit means, the improvement wherein:

(a) said ink supply reservoir includes means for venting it to approximately atmospheric pressure; and

(b) said ink circulation system includes: (i) means for generating a sub-atmospheric pressure region(s) within said ink conduit means at a location isolated from the atmospheric region of said ink supply reservoir; and (ii) ink return means for providing ink passage(s) from said catcher and/or an outlet of said print head to said sub-atmospheric pressure region(s).

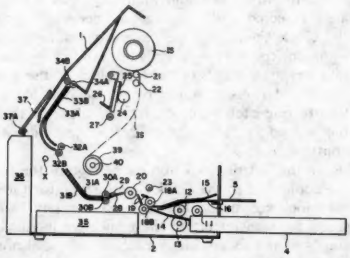


4,614,949

TRANSFER-TYPE THERMAL PRINTER

Kunio Hakkaku, Hadano; Yoh Matsushita, Yokohama; Takahiko Tokumasu, Atsugi, and Toshio Yamamoto, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 16, 1984, Ser. No. 661,378
Claims priority, application Japan, Oct. 20, 1983, 58-196513; Oct. 20, 1983, 58-196514; Oct. 20, 1983, 58-196515; Oct. 24, 1983, 58-198470; Oct. 24, 1983, 58-198471
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **20 Claims**



1. A transfer type thermal printer comprising:

transporting means for transporting a recording medium along a predetermined paper transporting path which includes a recording section where recording is effected on said recording medium;

a thermal printhead disposed at said recording section for providing a heat pattern in accordance with an image signal supplied thereto;

a platen roller disposed to be normally pressed against said printhead;

ink ribbon feeding means for a feeding a heatsensitive ink ribbon along a predetermined ink ribbon feeding path, said ink ribbon passing through said recording section as sandwiched between said printhead and said platen roller;

control means for controlling the operation of said trans-

porting means, printhead, platen roller and ink ribbon feeding means in a timed relation; and

housing means for housing therein said transporting means, printhead, platen roller, ink ribbon feeding means and control means, said housing means including an upper housing half and a lower housing half which is secured to said upper housing half to allow said upper housing half to be pivoted open or closed generally along said predetermined ink ribbon feeding path, wherein said ink ribbon feeding means includes a supply roll rotatably mounted to said upper housing half, a take-up spool rotatably mounted to said lower housing half for taking up said ink ribbon after having been used at said recording section and as unwound from said supply roll.

4,614,950

RECORDING APPARATUS CAPABLE OF PRECISELY POSITIONING A RECORDING SHEET

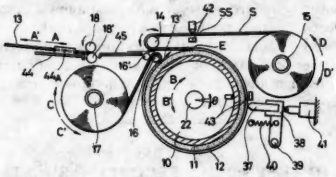
Yoshio Ito, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 654,105

Claims priority, application Japan, Sep. 28, 1983, 58-179739; Sep. 28, 1983, 58-179740; Sep. 28, 1983, 58-179741; Sep. 28, 1983, 58-179742; Dec. 13, 1983, 58-233525; Dec. 13, 1983, 58-233526

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH **39 Claims**



1. A recording apparatus for recording on a cut recording sheet an image corresponding to image information, comprising:

a rotating member;

guide means for guiding and transporting an elongated transfer sheet, having transfer materials for recording an image on the recording sheet by transferring them onto the recording sheet, wherein the transfer sheet extends essentially completely around said rotating member such that the cut recording sheet is pinched between said rotating member and the transfer sheet when conveyed plural times around said rotating member in the same direction; and

recording means for recording the image corresponding to the image information on the cut recording sheet, said recordinging means being disposed at a position where it opposes said rotating member along the conveyance path of the recording sheet which is conveyed while pinched between said rotating member and the transfer sheet.

4,614,951

OPTICAL RECORDING MEDIUM

Yoichi Osato, Yokohama; Ichiro Saito, Kawasaki, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

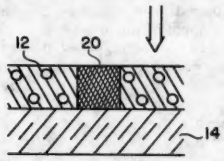
Continuation of Ser. No. 562,820, Dec. 19, 1983, abandoned. This application Dec. 5, 1985, Ser. No. 806,112

Claims priority, application Japan, Dec. 20, 1982, 57-223601

Int. Cl.[4] G01D *15/34*

U.S. Cl. 346—135.1 **11 Claims**

1. An optical recording medium for recording information by the formation of pits having a higher reflectivity than the areas surrounding the pits, by irradiation of a laser beam comprising: a substrate and a thin film which comprises (a) a substance capable of undergoing an optical change to form pits in said film having a high reflectivity by absorbing electromagnetic radiation from a laser beam and (b) a matrix of an iodine compound, said substance being present in said thin film in a range of from about 20 to about 70 mole %, inclusive.



4,614,952

PEN TYPE MULTI-COLOR RECORDING DEVICE

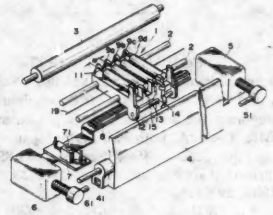
Hajime Nara; Kimihiro Kosugi, and Kazunori Uryo, all of Hino, Japan, assignors to Orient Watch Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1984, Ser. No. 650,406

Claims priority, application Japan, Sep. 14, 1983, 58-170949; Sep. 14, 1983, 58-170950

Int. Cl.[4] G01D *9/28, 15/16*

U.S. Cl. 346—139 R **4 Claims**



1. A pen type multi-color recording device of the type having a carriage movably disposed for linear movement in a main scanning direction and carrying a row of recording pens in which a pusher means is actuated to bring the selected pen at the proper slit of a comb-shaped divider into pressure contact with a recording medium for recording, comprising:

(a) actuator means movably disposed for driving said pusher means between a first position where it is moved away from said divider and a second position where it is inserted into one of the slits formed in said divider, said actuator means mounted on a fixed member to extend parallel with said pusher means and having a dimension wider than the effective plotting range;

(b) drive means for moving said actuator means in response to a pen release signal and a pen actuation signal; and

(c) stopper means mounted on said fixed member for temporarily arresting said pusher means at said first position.

4,614,953

SOLVENT AND MULTIPLE COLOR INK MIXING SYSTEM IN AN INK JET

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Apr. 12, 1984, Ser. No. 599,750

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R **8 Claims**

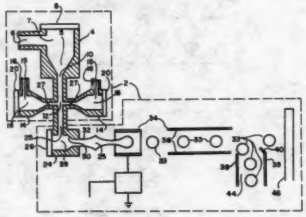
1. An ink jet printer head apparatus, comprising:

a primary chamber adapted to receive a continuous supply of an ink solvent carrier;

a plurality of secondary chambers, each adapted to receive a supply of different color ink;

a mixing conduit mounted in fluid communication with the primary and secondary chambers and adapted to receive a continuous pulsed flow of the ink solvent carrier and a preselected amount of the ink;

means to provide a continuous pulsed flow of the ink solvent carrier to said mixing conduit;



means to provide controlled pressure pulses within each secondary chamber to eject a preselected amount of ink into the mixing conduit;

a tertiary chamber mounted in fluid communication with the mixing conduit and adapted to receive the mixed color ink from said mixing conduit; and

means to provide pressure pulses within said tertiary chamber to continuously eject a desired color mixture.

4,614,954

RECORDING APPARATUS

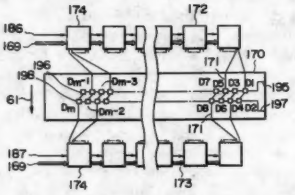
Morio Ohta; Shizuo Tsuchiya; Yoshito Nakano; Masaru Aikawa, and Seiji Asaumi, all of Musashimurayamashi, Japan, assignors to Casio Computer Co., Ltd. and Casio Electronics Mfg. Co. Ltd., both of Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 649,851

Claims priority, application Japan, Jan. 23, 1984, 59-8607; Mar. 31, 1984, 59-64753

Int. Cl.[4] G01D *15/14, 15/06, 9/42;* **G02F** *1/13*

U.S. Cl. 346—160 **5 Claims**



1. Liquid crystal shutter recording apparatus comprising:

(a) a liquid crystal shutter array comprising a plurality of shutters arranged in two rows of n columns that are staggered from row-to-row;

(b) said shutter array having write selecting electrodes corresponding to the respective rows in said array, and having recording signal electrodes corresponding to the respective columns in said array;

(c) a light source for applying light to said liquid crystal shutter array;

(d) an optical element for focusing light transmitted by said liquid crystal shutter array onto a recording medium; and

(e) first control means connected to said write selecting electrodes for supplying a write selecting signal composed of predetermined wave signals to the write selecting electrodes;

(f) second control means connected to said recording signal electrodes for supplying recording signals based on recording data to the recording signal electrodes, said recording signals being out of phase with said write selecting signals;

(g) said second control means comprising: an input terminal to which said recording data is applied; a shift register having a fixed number of bits for serially receiving said recording data and for outputting said recording data in parallel; latching means having odd and even outputs for latching said recording data from the outputs of said shift register; a plurality of multistage flip-flops respectively connected to the even outputs of said latching means; a multiplexer responsive to the outputs of the multistage flip-flops, to the odd outputs of the latching means, and to one of a plurality of predetermined signals for forming a plurality of driving signals; and a driver circuit responsive to said driving signals for forming recording signals applied to a first set of said recording signal electrodes of said shutter array.

4,614,955

HEAT SENSITIVE RECORDING PAPER

Takekatsu Sugiyama, and Hiroharu Matsukawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 5, 1984, Ser. No. 658,242

Claims priority, application Japan, Oct. 5, 1983, 58-187518

Int. Cl.[4] B41M *5/18*

U.S. Cl. 346—200 **5 Claims**

1. A heat sensitive recording paper comprising a support and a heat sensitive recording layer which contains a colorless or light colored electron-donating dye and a phenolic compound, said recording paper containing a sodium or potassium salt of a monovalent or divalent organic carboxylic acid having from 2 to 15 carbon atoms in the support, whereby the conductivity of the support is increased.

4,614,956

HEAT-SENSITIVE RECORDING SHEET

Masahiro Miyauchi, Funabashi, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

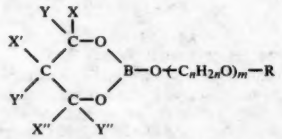
Filed Jun. 6, 1985, Ser. No. 741,905

Claims priority, application Japan, Jun. 7, 1984, 59-116941; Oct. 12, 1984, 59-213781; Oct. 18, 1984, 59-220048

Int. Cl.[4] B41M *5/18*

U.S. Cl. 346—209 **5 Claims**

1. A heat-sensitive recording sheet comprising (1) a substrate, (2) a heat-sensitive color-developing layer provided on said substrate, composed essentially of a colorless or light-colored dye precursor and a color developer capable of allowing said dye precursor when heated and, as necessary, (3) an overcoat layer provided on said heat-sensitive color-developing layer, wherein the heat-sensitive color-developing layer and/or the overcoat layer contain a boric acid ester, which is selected from the group consisting of an esterification product (A) between boric acid (a_{11}) or a tri)lower alkyl) borate (a_{12}) and at least one polyhydric alcohol having vicinal hydroxy groups (a_2), and a six-membered boric acid ester (B) represented by the general formula:



(I)

wherein X, X', X'', Y, Y', and Y'' each are a hydrogen atom, CH_3—, C_2H_5—, C_3H_7—, CH_3O—, C_2H_5O—, CH_3OCH_2— or $R'COOCH_2$—, R' is an alkyl group of 1 to 23 carbon atoms or an alkenyl group, R is an alkyl group of 1 to 24 carbon atoms, an alkenyl group, an aryl group, an alkylaryl group, an alkyloyl group, an alkenyloyl group, an aryloyl group, or an alkyla-

ryloyl group, n is 2, 3, or 4 and m is a positive number of 0 to 50.

4,614,957

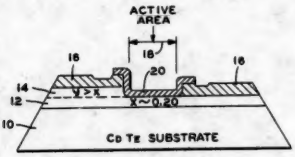
ELECTROMAGNETIC RADIATION DETECTORS

David K. Arch, Edina; M. Walter Scott, Minnetonka; Darryl L. Smith, Edina, and Leonard R. Weisberg, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 363,980, Mar. 31, 1982, abandoned. This application Dec. 4, 1984, Ser. No. 677,336

Int. Cl.[4] H01L *29/161*

U.S. Cl. 357—16 22 Claims



1. A photoconductive semiconductor device comprising:

a substrate;

a first layer of electromagnetic radiation sensitive semiconductor material of a given conductivity type and having a first energy bandgap on said substrate;

a first region of a second layer of semiconductor material of the same conductivity type as said first layer of semiconductor material, but having a second energy bandgap greater than said first bandgap, and in electrical contact with said first layer; and

a first ohmic contact means on and in electrical communication with said region of said second layer of semiconductor material and adapted to be connected to a first conductor of an external source of electrical voltage in a manner such that said ohmic contact will attract minority carriers;

a second ohmic contact means on and in electrical communication with either said first or said second layer of semiconductor material and adapted to be connected to a second conductor of said external source of electrical voltage of opposite polarity to said first contact of said external source of electrical voltage; and

wherein said first and second ohmic contact means on said semiconductor material are spaced from each other a sufficient distance such that external electromagnetic radiation may be sensed in the space therebetween.

4,614,958

LIGHT EMITTING AND RECEIVING DEVICE

Kazuo Mikami; Fumihiko Satoh, and Mikihiko Shimura, all of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 349,821, Feb. 18, 1982, abandoned. This application Jun. 25, 1985, Ser. No. 748,703

Claims priority, application Japan, Feb. 23, 1981, 56-25097

Int. Cl.[4] H01L *29/161, 33/00, 31/12, 27/14*

U.S. Cl. 357—19 5 Claims

1. A light-emitting and receiving device integrated into a single semiconductor chip comprising:

a substrate of a first conductivity type defining the collector of a base open phototransistor;

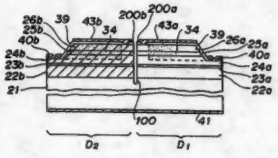
a first layer of the second type of conductivity formed on one side of said substrate and defining the base of said open phototransistor;

a second layer of said first type of conductivity formed on said first layer and defining the emitter of said open phototransistor,

said first and second layers being separated into at least one central photo-emitting region and at least one photo-sensitive receiving region outward from said photo-emitting region,

a first contact on the opposite side of said substrate defining a first terminal,

second contacts on said layer in said photo-emitting and photo-sensitive regions and defining a pair of second terminals so that application of an electrical signal to one



of said second terminals causes said light-emitting region to emit light and application of an electrical signal to the other of said second terminals causes said photo-sensitive region to produce an electrical signal in response to incident radiation; and

a groove separating said layers into at least two photo-transistors each having a central photo-emitting region and a photo-sensitive region outward therefrom.

4,614,959

IMPROVED HIGH VOLTAGE MOS TRANSISTOR WITH FIELD PLATE LAYERS FOR PREVENTING REVERSE FIELD PLATE EFFECT

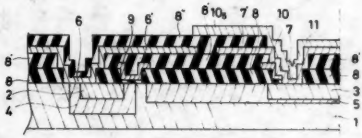
Kiyotoshi Nakagawa, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 213,635, Dec. 5, 1980. This application Sep. 28, 1984, Ser. No. 655,638

Claims priority, application Japan, Dec. 10, 1979, 54-160692; Dec. 10, 1979, 54-160693

Int. Cl.[4] H01L *29/78*

U.S. Cl. 357—23.8 6 Claims



1. A metal oxide semiconductor transistor device of a high voltage type comprising in combination:

a semiconductor substrate having a conductivity of a first type;

a source region formed in said semiconductor substrate, said source region having a conductivity of a second type opposite to that of said semiconductor substrate;

a channel region of the same conductivity type as said semiconductor substrate formed to surround said source region;

a drain region formed in said semiconductor substrate apart from said source region, said drain region having a conductivity of a second type opposite to that of said semiconductor substrate;

a high resistant region surrounding said drain region, and positioned between said drain region and said source region, having the same conductivity type as said drain region;

at least first, second and third insulating layers provided overlying each other and superimposed on and substantially covering said substrate;

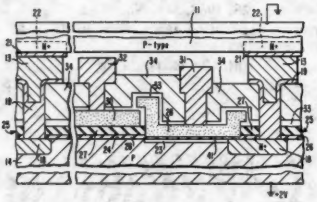
a drain electrode connected to said drain region;
a source electrode connected to said source region;
a gate electrode formed above said channel region having a portion of said first insulating layer inerpositioned therebetween;
separate field plate layers interpositioned between said second and third insulating layers and connected respectively to said drain and source electrodes; and
a conductive layer connected to at least one of said drain and source electrodes overlapping vertically with said field plate layers and interpositioned between said first and second insulating layers, the combination of said field plate layers and said conductive layer substantially covering said high resistant region and imparting a field plate effect to said high resistant region.

4,614,960

FOCAL PLANE ARRAY

Nathan Bluzer, Silver Spring, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 15, 1983, Ser. No. 514,340
Int. Cl.[4] H01L *29/78, 27/14, 31/00*
U.S. Cl. 357—24 **5 Claims**



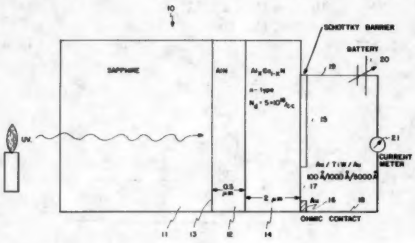
1. In a focal plane array having a plurality of commonly connected photodetectors and a plurality of charge coupled devices (CCD's) arranged in rows and columns coupled to respective detectors, each of said CCD's including transfer and direct injection input gates overlaying an inner surface of a semiconductive substrate facing the detectors, each of said input gates being commonly connected for the application of a bias voltage during operation, and whereby photocurrent commences to flow into each CCD upon the application of a voltage of minimum threshold value to its respective input gate, the improvement of a dielectric layer having first portions sandwiched between the inner surface of the substrate and opposing surfaces of each of the input gates, said dielectric layer having second portions sandwiched between the inner surface of the substrate and opposing surfaces of the transfer gates, said sandwiched first portions directly beneath each of the input gates being of a thickness between approximately 80 and 200 Angstroms to improve the uniformity of the threshold voltage between individual input gates, said sandwiched second portions directly beneath the transfer gates being thicker than the portions directly beneath each of the input gates, said second portions being of sufficient thickness to prevent dielectric breakdown of the dielectric during clocking operation of the CCD.

4,614,961

TUNABLE CUT-OFF UV DETECTOR BASED ON THE ALUMINUM GALLIUM NITRIDE MATERIAL SYSTEM

M. Asif Khan, Burnsville; Richard G. Schulze, Hopkins, and Richard A. Skogman, Plymouth, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 9, 1984, Ser. No. 658,961
Int. Cl.[4] H01L *27/14, 31/00*
U.S. Cl. 357—30 **6 Claims**



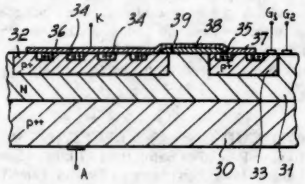
1. In a solid state UV detector comprising:
a. a basal plane sapphire (Al_2O_3) substrate;
b. an epitaxial single-crystalline aluminum nitride (AlN) layer grown on the surface of the substrate;
c. An epitaxial single-crystalline aluminum gallium nitride ($Al_xGa_{1-x}N$) layer grown over said AlN layer; and,
d. a photodetector fabricated on said $Al_xGa_{1-x}N$ layer surface.

4,614,962

CONTROLLED ELECTRONIC SWITCHING DEVICE FOR THE SUPPRESSION OF TRANSIENTS

Franco Bertotti, Milan; Paolo Ferrari, Gallarate; Mario Foroni, Valeggio Sul Mincio, and Sergio Garue, Peschiera Borromeo, all of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed Dec. 3, 1984, Ser. No. 677,763
Claims priority, application Italy, Dec. 15, 1983, 24197 A/83
Int. Cl.[4] H01L *29/74, 27/02;* **H03K** *17/60*
U.S. Cl. 357—38 **2 Claims**



1. A controlled electronic switching device for the suppression of transients, having a first device main surface and a second device main surface separated by a plurality of semiconductor layers of alternating conductivity type, said plurality of semiconductor layers including a first layer facing said first device main surface, a second layer facing said first layer, a third layer partially embedded in said second layer, forming a first junction therewith having an area, and facing said second device main surface, at least one main cathode zone partially embedded in said third layer and facing said second device main surface, at least one fourth layer partially embedded in said second layer, forming a second junction therewith having an area smaller than said first area, and facing said second device main surface, said at least one fourth layer extending adjacent to said third layer, said second layer having

a portion brought up said second device main surface, thereby, physically separting said third layer from said at least one fourth layer, at least one auxiliary cathode zone partially embedded in said at least one fourth layer and facing said second device main surface, said first, second, third layers and said at least one main cathode zone forming a main switch and said first, second, fourth layers and said at least one auxiliary cathode zone forming an auxiliary switch, a resistive layer of a first ohmic value extending in parallel between said third layer and said at least one main cathode zone and a second resistive layer of a second ohmic value higher than said first ohmic value extending in parallel between said at least one fourth layer and said at least one auxiliary cathode zone, and being electrically connected to said first resistive layer, thereby said auxiliary switch turning on at low control currents and switching on said main switch and remaining turned off for quick voltage variations.

4,614,963

PLASTICS ENCAPSULATED ELECTRONIC DEVICES

Jack Brettle, Towcester, and Martin T. Goosey, Kingsley, both of England, assignors to Plessey Overseas Limited, Illford, England

Continuation of Ser. No. 318,360, Nov. 5, 1981, abandoned. This application Nov. 18, 1983, Ser. No. 552,867

Claims priority, application United Kingdom, Nov. 8, 1980, 8035975; Jun. 17, 1981, 8118685

Int. Cl.[4] H01L *23/30*

U.S. Cl. 357—72 **2 Claims**

1. A plastic encapsulated electronic device in which p-Cresol is present in the plastic material to reduce corrosion of the metallisation during the lifetime of the electronic device.

4,614,964

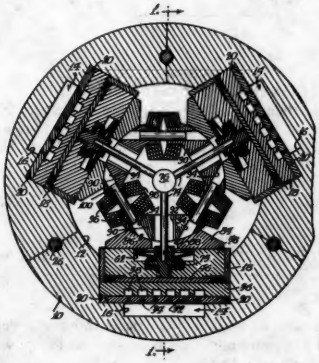
COAXIAL SEMICONDUCTOR PACKAGE

Thomas Sutrina, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 15, 1984, Ser. No. 641,215

Int. Cl.[4] H01L *23/46, 29/52*

U.S. Cl. 357—76 **14 Claims**



1. A semiconductor package comprising:

a first, electrically conducting bus;

a second, electrically conducting bus spaced from and generally surrounding said first bus in approximate concentric relation thereto and being electrically isolated therefrom; and

a plurality of generally equally angularly spaced semi-conductors in the space between said buses, each said semiconductor having at least first and second electrodes;

said first electrodes being electrically connected to said first bus and said second electrodes being electrically connected to said second bus.

4,614,965

COLOR CAMERA WITH STRIPE FILTER USING TWO CONTROLLABLE BIAS LIGHTS FOR IMPROVING COLOR REPRODUCIBILITY IN DARK SCENES AND REDUCING AFTERIMAGES

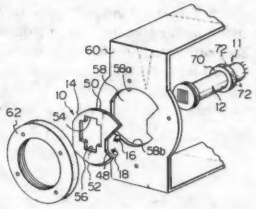
Itsuo Takanashi, Yokohama; Shintaro Nakagaki, Fujisawa, and Takashi Kuriyama, Tokyo, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 28, 1983, Ser. No. 555,864

Claims priority, application Japan, Nov. 30, 1982, 57-181416[U]

Int. Cl.[4] H04N *9/077, 9/07, 9/09, 5/228*

U.S. Cl. 358—44 **5 Claims**



1. A color television imaging apparatus for improving color reproducibility in dark scenes and reducing afterimages, comprising:

a color television imaging device for generating a multiplex color television video output signal, said device including a photoelectric transducer section and a color separation stripe filter;

first bias light supply means for applying a first bias light, which improves color reproducibility in dark scenes, to the transducer section of the imaging device through the stripe filter, said first bias light supply means being located in front of the transducer section which is positioned in a front portion of the imaging device; and

second bias light supply means for applying a second bias light, which reduces afterimages, to the transducer section of the imaging device, said second bias light supply means being located in a rear portion of the imaging device and facing the transducer section.

4,614,966

ELECTRONIC STILL CAMERA FOR GENERATING LONG TIME EXPOSURE BY ADDING RESULTS OF MULTIPLE SHORT TIME EXPOSURES

Yutaka Yunoki, and Kenji Kimura, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1983, Ser. No. 524,121

Claims priority, application Japan, Aug. 20, 1982, 57-144560

Int. Cl.[4] H04N *9/077, 5/228, 5/30, 9/04*

U.S. Cl. 358—44 **18 Claims**

1. An image recording apparatus, comprising:

solid-state image pickup means;

A/D converting means for converting a one-frame analog image signal from said solid-state image pickup means to a one-frame digital image signal; and

recording means coupled to said A/D converting means for accumulating a plurality of one-frame digital image signals from said A/D converting means to form a single one-frame digital image signal, and for recording the single one-frame digital image signal;

said recording means comprising:

a memory for storing the single one-frame digital image signal;

an adder having two input terminals, one of which is coupled to an output of said A/D converting means and the other of which is indirectly coupled to an output of said memory, and an output terminal coupled to an input of said memory, said adder adding the one-frame digital image signal produced from said A/D converting means and a processed single one-frame digital image signal produced from the memory and writing the addition results into said memory;

detecting means coupled to said output terminal of said adder for detecting a minimum value of the single one-frame digital image signal; and

a subtractor having two input terminals respectively coupled to said output of said memory and an output of said detecting means, and an output terminal coupled to one of said input terminals of said adder to provide said indirect coupling of said adder to said output of said memory, said subtracter subtracting the minimum value from the single-one frame digital image signal read out from said memory to provide said processed single one-frame digital signal.

5. An image recording apparatus, comprising:

solid-state image pickup means;

A/D converting means for converting a one-frame analog

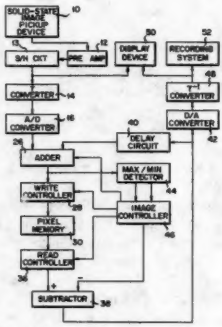


image signal from said solid-state image pickup means to a one-frame digital image signal; and

recording means coupled to said A/D converting means for accumulating a plurality of one-frame digital image signals from said A/D converting means to form a single one-frame digital image signal, and for recording the single one-frame digital image signal;

said recording means comprising:

a memory for storing the single one-frame digital image signal;

an adder having two input terminals respectively coupled to outputs of said A/D converting means and of said memory, and an output terminal coupled to an input of said memory, said adder adding the one-frame digital image signal produced from said A/D converting means and a single one-frame digital image signal produced from the memory and writing the addition results into said memory;

detecting means coupled to said output terminal of said adder for detecting a maximum value of the single one-frame digital image signal; and

means for interrupting the writing of data into said memory when the maximum value detected by said detecting means exceeds a given value.

4,614,967

METHOD AND APPARATUS FOR REPRODUCING A COLOR IMAGE USING ADDITIVE AND SUBTRACTIVE PRIMARY COLORS

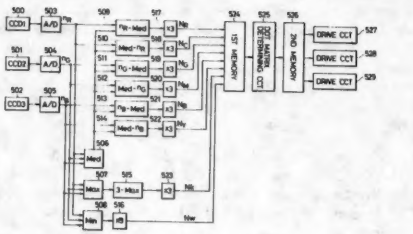
Kazuo Sayanagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,567

Claims priority, application Japan, Jun. 14, 1982, 57-102586

Int. Cl.⁴ H04N *1/46;* **G03F** *3/08;* **G01D** *15/16, 15/18*

U.S. Cl. 358—75 **5 Claims**



1. A method for recording a full-color image, comprising the steps of:

selecting eight colors, including three primary colors comprising an additive system of red, green and blue, three primary colors comprising a subtractive system of cyan, magenta and yellow, and white and black;

determining the relative intensities of said eight colors in one picture element of the image to be recorded; and

conducting color mixture recording to represent said one picture element based on the relative intensities of said eight colors therein by using colors chosen from one of said red, green and blue additive primary colors, one of said cyan, magenta and yellow subtractive primary colors, white and black, wherein said chosen colors are recorded as areas which do not overlap each other.

4,614,968

CONTRAST SMOKE DETECTOR

William J. Rattman, Bass River; Stephen Marchetti, Norwell, and Aaron A. Galvin, Lexington, all of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,062

Int. Cl.⁴ H04N *7/18;* **G08B** *17/10*

U.S. Cl. 358—93 **11 Claims**

1. A multi-contrast target having one or more relatively dark areas and one or more relatively light areas and disposed in an area being monitored;

sensing means separated from the target in the area being monitored and including means for separately viewing the contrasting sensible areas of the target and providing an output signal representative of the relative contrast of the separately viewed target areas;

said sensing means including means for deriving an AGC signal from an area of the target; and

means operative in response to said output signal to provide an alarm signal when said output signal changes by a predetermined amount caused by the presence of particles in the area being monitored.

4,614,969
PROCESS FOR MANUFACTURING AN ENDLESS TUBULAR FELT AND APPARATUS FOR IMPLEMENTING THE PROCESS

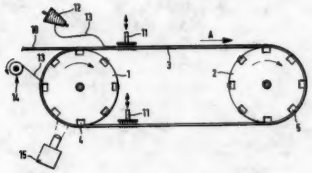
Sebastian Gerundt, Alsdorf; Rolf Guse, Reutlingen; Walter Halterbeck, Düren; Günter Hollenberg, Kreuzau-Winden; Gerhard Maier, Neuhausen, and Karl-Heinz Müller, Düren, all of Fed. Rep. of Germany, assignors to Thomas Josef Heimbach GmbH, Co., Düren-Mariaweiler, Fed. Rep. of Germany

Filed Apr. 24, 1984, Ser. No. 603,324

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1983, 3319241; Apr. 30, 1983, 3315834

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—101 **20 Claims**



1. A process for manufacturing and/or treating an endless tubular felt or similar tubular structure whereby a material, for instance a length of fiber web, a coating, longitudinal threads or the like, are deposited in continuous manner on one width of an already prepared tubular felt, at least in part, and rotating circumferentially, and/or whereby the tubular felt is treated in a width, for instance by singeing or needling, which is less than that of the tubular felt, the deposition or the treatment being carried out by a relative motion of, or toward the tubular felt respectively, in helical manner and transversely to its direction of advance, possibly with partial overlap, characterized

in that at least one contrasting marking line **(13)** is continuously deposited along the circumferential direction of the tubular felt **(3)** and that its position or the spacing from an adjacent marking line located to the rear as seen in the direction of advance is sensed in contact-free manner as the actual value, the relative displacement always being set so that the sensed actual value shall differ as little as possible from a specific reference value.

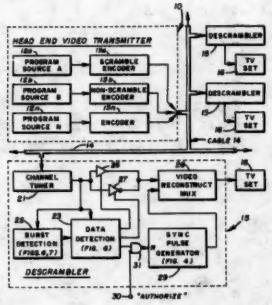
4,614,970
DESCRAMBLER APPARATUS

Charles B. Clupper, Cameron Park, and Robert J. Mathews, Fair Oaks, both of Calif., assignors to U.S. Computer Systems, Sacramento, Calif.

Filed Dec. 13, 1983, Ser. No. 561,054

Int. Cl.[4] H04N *7/167*

U.S. Cl. 358—120 **28 Claims**



1. A descrambler apparatus for use with a video transmitter which transmits frames of video signals with scrambled horizontal and vertical synchronizing pulses and with variably coded descramble signals, there being one descramble signal in each frame of transmission, in which the coding of each of said descramble signals varies with the length of time that the descramble signal precedes a predetermined point in the frame, said descrambler apparatus comprising:

receiving means for receiving said transmitted frames of video signals,

a resettable sync generator means for generating a full frame sequence of horizontal and vertical synchronizing pulses in response to each resetting thereof,

detection means for detecting the codings of the variably coded descramble signals received by said receiving means,

reset means for resetting said sync generator means after each detection of a descramble signal with the time interval between the detection of said descramble signal and the setting of said sync generator corresponding to the time coding of said descramble signal,

means for combining the full frame sequences of horizontal and vertical synchronizing pulses from said resettable sync generator means with the frames of transmitted video signals received by said receiving means.

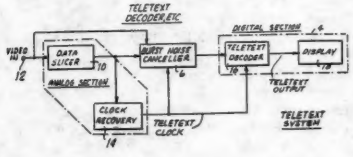
4,614,971
ERROR ELIMINATING SYSTEM FOR TELETEXT

George A. Maney, Marina Del Rey, Calif., and Theodore S. Rzeszewski, Lombard, Ill., assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 5, 1983, Ser. No. 455,658

Int. Cl.[4] H04N *7/087, 7/08*

U.S. Cl. 358—147 **19 Claims**



1. A system for eliminating error in teletext signals caused by the presence of noise accompanying the teletext signals, the teletext signals accompanying television signals which include television video signals and television synchronous signals, the system comprising:

a teletext packet buffer for receiving the teletext signals and outputting received teletext signals;

a timing circuit for producing timing signals from the television synchronous signals;

a control circuit responsive to the timing signals for controlling the teletext packet buffer including causing it to output teletext signals; and

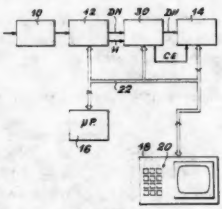
a noise detector coupled to receive the television video signals for detecting the presence of noise in the accompanying teletext signals and for preventing teletext signals which were received by the teletext packet buffer in the presence of noise as detected by the noise detector to be output from the teletext packet buffer.

4,614,972

TELETEXT RECEIVER

Roger Motsch, Mordelles, and Claude Séchet, Rennes, both of France, assignors to L'Etat Francais, France

Filed Feb. 15, 1984, Ser. No. 580,535
Claims priority, application France, Feb. 22, 1983, 83 02860
Int. Cl.[4] H04N *7/087, 7/04*
U.S. Cl. 358—147 **1 Claim**



1. A teletext receiver comprising:

a demodulation circuit having an input receiving a composite signal resulting from multiplexing between digital data and a video signal and an output supplying the digital data only,

a data demultiplexing circuit having an input connected to the output of the demodulation circuit and an output supplying digital data along continuous channels, said data being organized into articles, each article incorporating an article start constituted by two special codes, followed by an article heading having, inter alia, three classification bytes C1, C2 and C3,

memory having a digital data input and a control input,

a microprocessor,

a numbering keyboard for choosing a three-byte code, said code being between 001 and 999,

wherein it also comprises an early article acquisition decision circuit inserted between the demultiplexing circuit and the memory, said circuit incorporating:

a shift register having a series input connected to the demultiplexing circuit, a series output connected to the data input of the memory, said register having three first cells containing respectively, said three classification bytes C_1, C_2 and C_3 and two other cells containing said two special codes connected to five parallel outputs,

a storage module having a first group of three storage cells able to store three bytes, namely A_1, A_2 and A_3, a second group of three storage cells able to store three bytes, namely, B_1, B_2 and B_3 and a two-bit flip-flop, which can therefore be in any one of four logic states,

a logic comparison circuit incorporating a first group of three byte comparators with two inputs, one input connected to a respective one of the first group of three storage cells and the other input connected to one of the parallel outputs of the three first cells of the shift register, said first group carrying out a first test involving bytes C_1, C_2 and C_3 and bytes A_1, A_2 and A_3, a second group of three byte comparators with two inputs, one input connected to the output of a respective one of the second group of three storage cells and the other to one of the parallel outputs of the three first cells of the shift register, said second group carrying out a second test involving bytes C_1, C_2 and C_3, and finally an article start code detector connected to the parallel outputs of the last two cells of the shift register,

a comparison synthesis logic circuit connected to said first and second groups of comparators, to the start code detector and to the flip-flop, said circuit supplying an opening or closing control signal applied to the control input of the memory, as a function of the result of said tests,

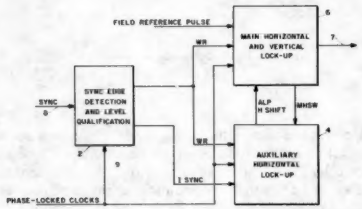
a state of the flip-flop defining a resetting of the storage cells, the microprocessor loading in an appropriate manner the storage cells with said bytes A1, A2 and A3 defining a page to be selected and with said bytes B1, B2 and B3 defining a threshold, such that all the articles whose classification bytes C1, C2 and C3 exceed this threshold, bring about the appearance of the memory opening signal, said microprocessor checking after each data transmission cycle the state of the memory in order to raise or lower the threshold, or leave it unchanged.

4,614,973

METHOD AND APPARATUS FOR GENERATING TIMING PULSES

Greg A. Sorenson, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 483,332, Apr. 8, 1983, abandoned. This application Sep. 28, 1983, Ser. No. 537,313
Int. Cl.[4] H04N *5/08*
U.S. Cl. 358—153 **3 Claims**



2. Apparatus for generating timing pulses in response to an input signal which includes a train of nominally periodic pulses, comprising:

first means for detecting a pulse of the input signal;

second means for determining whether the detected pulse is a pulse of said train of nominally periodic pulses;

third means for employing a detected pulse of said pulse train to initiate cyclical production of pulses with a period dependent on the nominal period of said pulse train; and

fourth means for using the cyclically produced pulses to generate said timing pulses.

4,614,974

RANGE FINDING SYSTEM SUITED FOR VIDEO CAMERA

Masamichi Toyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1985, Ser. No. 706,602
Claims priority, application Japan, Feb. 29, 1984, 59-37622
Int. Cl.[4] H04N *5/232*
U.S. Cl. 358—227 **20 Claims**

16. A video camera comprising:

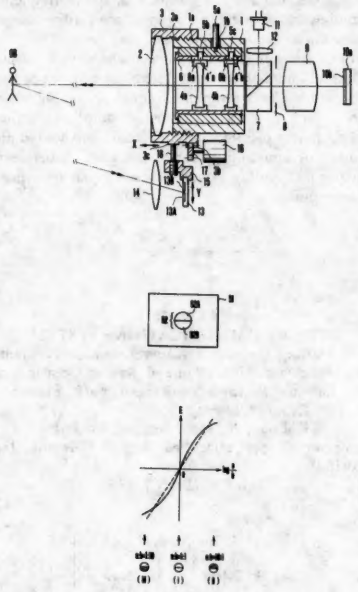
(a) a focus adjustable lens system for forming an image of an object;

(b) image pick-up means for producing an image signal representing the object image;

(c) an automatic focusing system of a light beam projection type which projects a light beam toward the object and automatically focuses said lens system on the object on the basis of the reflected light beam coming from the object, said focusing system including a light sensor with a pair of sensor sections and detecting the focus of the lens system by the comparison of output signals of the sensor sections;

(d) compensation signal generation means for generating, on the basis of the image signal generated by said image pick-up means, a compensation signal depending upon the difference in light reflecting conditions of two portions of the object which are illuminated with the light beam projected by said focusing system and substantially corre-

spond to the fields of views of the sensor sections of said light sensor, respectively; and



(e) compensation means for compensating a focus detection signal of said focusing system with the compensation signal generated by said compensation signal generation means.

4,614,975

FOCUS AREA CHANGE CIRCUIT

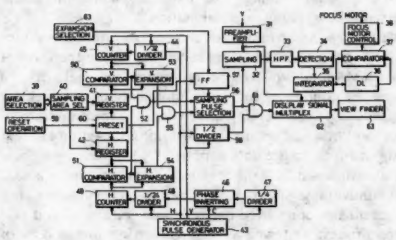
Osamu Kaite, Neyagawa, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Oct. 24, 1985, Ser. No. 791,004

Claims priority, application Japan, Oct. 26, 1984, 59-162656[U]

Int. Cl.[4] G03B *3/00;* H04N *5/232*

U.S. Cl. 358—227 6 Claims



1. A focus area change circuit for changing a focus area of a video camera designated by focus control means for controlling the focus of said video camera, said focus change circuit comprising:

synchronous signal generator means (43) for generating vertical synchronizing signals, horizontal synchronizing signals, division signals obtained by dividing said horizontal synchronizing signals and multiplication signals obtained by multiplying said horizontal synchronizing signals;

a vertical counter (45) receiving said vertical synchronizing signals as reset inputs for counting said division signals of said horizontal synchronizing signals;

vertical position designating means (39, 40, 41) for designating vertical positions of said focus area;

vertical comparator means (50) for comparing count values of said vertical counter with said vertical positions designated by said vertical position designating means thereby to detect coincidence of the same;

a horizontal counter (49) receiving said horizontal synchronizing signals as reset inputs to count said multiplication signals of said horizontal synchronizing signals;

horizontal position designating means (39, 40, 42) for designating horizontal positions of said focus area;

horizontal comparator means (51) for comparing count values of said horizontal counter with said horizontal positions designated by said horizontal position designating means thereby to detect coincidence of the same;

sampling pulse generator means (52) for obtaining logical products of outputs from said vertical comparator means and those from said horizontal comparator means thereby to generate sampling pulses;

vertical expansion means (53) for expanding outputs from said vertical comparator means;

horizontal expansion means (54) for expanding outputs from said horizontal comparator means;

expansion sampling pulse generator means (55) for obtaining logical products of outputs from said vertical expansion means and those from said horizontal expansion means thereby to generate expansion sampling pulses;

sampling pulse selection means (56) for selecting either said sampling pulses generated from said sampling pulse generator means or said expansion sampling pulses generated from said expansion sampling pulse generator means;

sampling means (32) for sampling high frequency components of video signals outputted from said video camera on the basis of said sampling pulses or said expansion sampling pulses selected by said sampling pulse selection means; and

focus driving means (38) for driving said focus control means to maximize the output level of said sampling means.

4,614,976

DOCUMENT READER

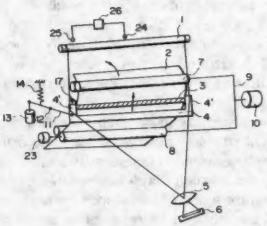
Minoru Ogata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1984, Ser. No. 666,652

Claims priority, application Japan, Nov. 4, 1983, 58-205843; Nov. 21, 1983, 58-217766

Int. Cl.[4] H04N *1/32*

U.S. Cl. 358—257 8 Claims



1. A document reading apparatus comprising:

illumination means;

drive means for moving the document relative to said illumination means;

image pick-up means for converting the image of said document irradiated by said illumination means into an electric signal;

reference means irradiated by said illumination means to form a reference light to be applied to said image pick-up means;

memory means for storing information with respect to the distribution of the degree of light intensity of said reference light on said image pick-up means;

correction means for correcting the electric signal of the document image from said image pick-up means in accordance with the output of said memory means; and

control means for changing said document reading apparatus from a mode in which the document image is projected onto said image pick-up means to a mode in which said reference light is projected onto said image pick-up means at a predetermined point of time even if during the time at which the document image is still in position for being projected onto said image pick-up means.

4,614,977

STILL PICTURE SIGNAL CONVERSION APPARATUS CAPABLE OF TRIMMING OPERATION

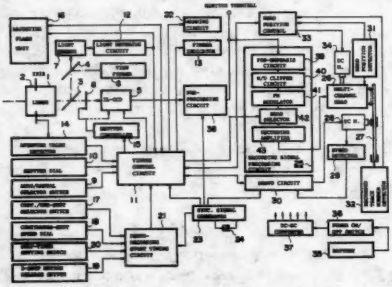
Atsushi Kawahara, Kawasaki; Tadashi Ota, Tokyo; Toshihisa Kuroiwa, Kawasaki; Masaki Isogai, Tokyo; Norihiko Takatsu, Kawasaki, and Koichiro Kawamura, Chiba, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,504

Claims priority, application Japan, Dec. 23, 1981, 56-207134

Int. Cl.[4] H04M *1/40*

U.S. Cl. 358—260 **12 Claims**



1. A still picture signal conversion apparatus comprising:

a horizontal trimming circuit whereby a still picture signal reproduced from a recording medium or a magnetic disk is sampled every horizontal scan line and the sampled picture signal, within limits of horizontal scan positions to be retained as a result of a trimming, is converted to a digitized picture signal corresponding to a predetermined number of horizontal picture elements and outputting such a digitized picture signal every horizontal scan line; and

a vertical trimming circuit whereby said digitized picture signal generated every horizontal scan line fron said horizontal trimming circuit is temporarily stored in a plurality of memory means such that while reading out at a desired rate said picture signal of said stored contents within limits of vertical positions to be retained as a result of a trimming, a deficiency of horizontal scan lines within said limits of vertical positions with respect to a predetermined number of horizontal lines is interpolated by a weighted scan line interpolation calculation corresponding to the ratio of said trimming, wherein said horizontal trimming circuit comprises:

sampling means having a variable sampling frequency for sampling and digitizing said reproduced still picture signal every horizontal scan line; and

horizontal trimming control means whereby in accordance with said limits of horizontal scan positions to be retained by trimming said sampling frequency is controlled and varied such that the positions of sampling starting and ending points of said sampling means are varied and the number of sampling points in the interval between said starting and ending points is made equal to a predetermined number.

4,614,978

OFFICE COMMUNICATIONS SYSTEM

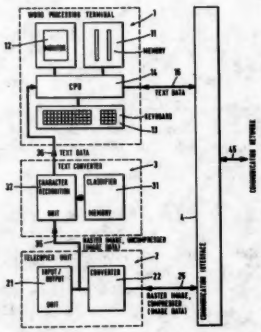
Wolfgang Doster, Dornstadt; Anton Kresser, Wöllstadt, and Jürgen Schürmann, Ulm, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 20, 1982, Ser. No. 340,861

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101543

Int. Cl.[4] H04N *1/415*

U.S. Cl. 358—263 **9 Claims**



1. An office communications system for the manipulation and/or transmission of image and text data via a communications network comprising in combination:

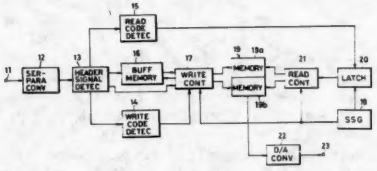
a word processing terminal connected to a communications network for transmitting and receiving text in the form of character data via the communications network; a telecopier connected to the communications network for transmitting and receiving image data via the communications network; and means for permitting the editing of text in the form of image data supplied by said telecopier and the transmission of said text as character data via said communications network, said means including text converter means, connected between said telecopier and said word processing terminal, for converting image data of text pages received from said telecopier to character data of the code type used by said word processing terminal and for feeding the converted data to said word processing terminal, said text converter means including a character recognition unit having a data input connected to an output of said telecopier and a data output connected to an input of said word processing terminal, and a classifier memory for storing desired classifier data connected in data exchange with said character recognition unit.

4,614,979

DIGITAL VIDEO SIGNAL REPRODUCING APPARATUS

Hiroyuki Sugiyama, Isehara; Yoshiaki Amano, Fujisawa; Ryozo Abe, Yokohama; Nobuaki Takahashi, Yamato; Takeshi Shibamoto, Sagamihara; Hideo Sato, Yokohama, and Koji Tanaka, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 7, 1983, Ser. No. 530,033
Claims priority, application Japan, Sep. 22, 1982, 57-165605
Int. Cl.[4] H04N 5/91
U.S. Cl. 358—335 3 Claims



1. A digital video signal reproducing apparatus for reproducing a digital video signal from a recording medium, said digital video signal having a signal format in which picture element data groups corresponding to one picture are time-sequentially multiplexed together with at least one write-in specifying code, at least one read-out specifying code and one end-of-data signal which is added to an end part of said picture element data groups corresponding one picture, said picture element data groups being obtained by subjecting a video signal to a digital pulse modulation, said digital video signal reproducing apparatus comprising:

reproducing means for reproducing said digital video signal from said recording medium,

a first detecting circuit for detecting said write-in specifying code within the digital video signal reproduced by said reproducing means;

a second detecting circuit for detecting said read-out specifying code within the reproduced digital video signal from said reproducing means;

a synchronizing signal generator for generating a first signal indicating a horizontal blanking period, a vertical synchronizing signal and a second signal indicating a video interval;

first and second memroy circuit parts each having a memory capacity for storing the picture element data groups corresponding to one picture;

a write controller supplied with the write-in specifying code from said first detecting circuit, said first signal and the picture element data groups within said reproduced digital video signal, for causing said picture element data groups to be written into one of said first and second memory circuit parts depending on a value of said write-in specifying code for every said horizontal blanking period, said write controller disabling write-in to said first and second memory circuit parts when said end-of-data signal is reproduced subsequent to said write-in specifying code and said read-out specifying code;

a latch circuit supplied with the read-out specifying code from said second detecting circuit, for latching said read-out specifying code when the vertical synchronizing signal is generated by said synchronizing signal generator immediately after said read-out specifying code is detected by said second detecting circuit and before said end-of-data is reproduced;

a read controller supplied with the read-out specifying code from said latch circuit and said second signal, for causing stored picture element data to be successively read out from one of said first and second memory circuit parts depending on a value of said read-out specifying code for every said video interval; and

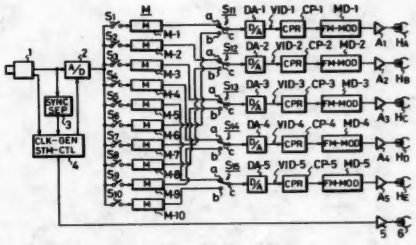
a converting circuit for converting the picture element data groups read out from said first and second memory circuit parts into an analog video signal.

4,614,980

MAGNETIC RECORDING AND REPRODUCING APPARATUS FOR RECORDING AND REPRODUCING A VIDEO SIGNAL OBTAINED FROM A HIGH SPEED SCANNING VIDEO CAMERA

Takeshi Ninomiya, and Hideto Suzuki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1984, Ser. No. 602,369
Claims priority, application Japan, Apr. 22, 1983, 58-71280; Apr. 22, 1983, 58-71281; Apr. 22, 1983, 58-71282
Int. Cl.[4] H04N 5/782
U.S. Cl. 358—335 4 Claims



1. Apparatus for recording and reproducing on or from a magnetic recording tape a high speed video signal obtained from a high speed scanning video camera having a scanning speed N times the scanning speed of a standard video camera generating a standard television video signal, where N is an integer equal to or greater than 2; said apparatus comprising:

means for driving said magnetic recording tape to run at tape speed N times the tape speed of a standard recording and reproducing apparatus;

means for dividing said high speed video signal into N channels of video signals;

means for expanding the time axis of said high speed video signal so that each of said N channels of video signals is slightly compressed as compared to said standard television video signal;

means for modulating each of said video signals the time axes of which are expanded; and

recording and reproducing means including a rotary drum having N rotary magnetic heads mounted on the circumference thereof with an equal angular distance therebetween to record each of said modulated video signals on said magnetic recording tape as successive tracks and a playback head mounted on said circumference at a predetermined position, the diameter of said rotary drum being in a predetermined relation to that of said standard magnetic recording and reproducing apparatus.

4,614,981

APPARATUS FOR REPRODUCING VIDEO SIGNAL

Tsutomu Fukui, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 456,117, Jan. 6, 1983, abandoned. This application Jul. 29, 1985, Ser. No. 759,913
Claims priority, application Japan, Feb. 10, 1982, 57-18831
Int. Cl.[4] H04N 5/95
U.S. Cl. 358—337 1 Claim

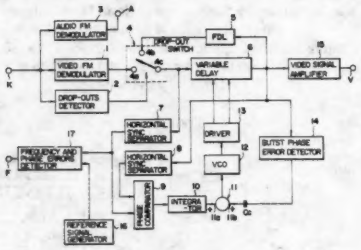
1. An apparatus for reproducing a video signal, comprising:

a video FM demodulator for demodulating a video FM signal detected from a video information recording medium for reproducing a video signal;

a variable delay provided after said video FM demodulator for delaying said video signal;

a first horizontal sync separator for separating horizontal sync signals from said video signal which is to be inputted to said variable delay;

a second horizontal sync separator for separating horizontal sync signals from said video signal which has been outputted from said variable delay;



a phase comparator which receives the output of said first and second horizontal sync separators for comparing the respective phases of said horizontal sync signals outputted from said first and second horizontal sync separators and producing a phase-error voltage; and

a voltage controlled oscillator controlled by said phase-error voltage, for controlling said variable delay so as to keep the delay time of said variable delay at 1H.

4,614,982

PICTURE GENERATING APPARATUS FOR A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

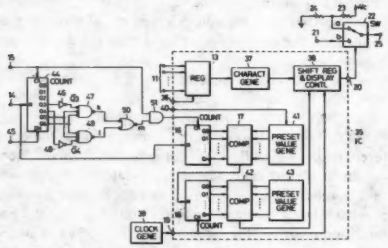
Hirozi Ibaraki, Saitama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 11, 1984, Ser. No. 599,175

Claims priority, application Japan, Apr. 19, 1983, 58-68894

Int. Cl.[4] H04N *5/76*

U.S. Cl. 358—342 **7 Claims**



1. A picture generating apparatus for a rotary recording medium reproducing apparatus, said reproducing apparatus having means for compatibly playing rotary recording mediums which are respectively recorded with video signals of different television systems, said reproducing apparatus reproducing one of said recorded video signals from a rotary recording medium by controlling the rotational speed of the rotary recording medium so that a horizontal synchronizing pulse in the recorded video signal is reproduced with a frequency which coincides with a horizontal scanning frequency of a video signal of a first system which employs 525 scanning lines, said picture generating apparatus comprising:

first input terminal means for receiving selected one of picture information data to be displayed on a specific part of a screen, said picture information data including a first address information, a second address information, and an additional information, said first address information being reproduced from the rotary recording medium and indicating an instant position of a recorded track being played, said second address information being designated manually and indicating a position of a recorded track on the rotary recording medium, said additional information indicating mode and type of signal recorded on the rotary recording medium;

second input terminal means for receiving horizontal synchronizing pulses which are reproduced subsequent to a vertical synchronizing pulse of the recorded video signal which is reproduced from the rotary recording medium;

storing means coupled to said first input terminal means for storing said picture information data from said first input terminal means, said data stored in said storing means being different from picture information data of said specific part being composed as a part of the recorded video signal;

counter means coupled to said second input terminal means for counting the horizontal synchronizing pulses from said input terminal means and for producing a coincidence signal when a counted value coincides with a preset value;

data obtaining means for successively obtaining said stored picture information data from said means for a predetermined number of scanning from a time when said coincidence signal is produced from said counter means;

signal selecting means switched and controlled in response to an output signal of said data obtaining means for selectively supplying to a monitoring reproducing apparatus a picture signal having a predetermined constant level in a duration in which said stored picture information data is obtained from said data obtaining means and the recorded video signal which is reproduced from said rotary recording medium in a duration in which said stored picture information data is not obtained from said data obtaining means; and

control means for controlling by an output thereof said counter means so that said counter means produces said coincidence signal at a point when approximately 25 horizontal synchronizing pulses are reproduce more than a preset value of said counter means used when playing a rotary recording medium recorded with the video signal of the first system, only when the recorded video signal recorded on said rotary recording medium is of a second system employing 625 scanning lines.

4,614,983

AUTOMATIC MUSIC PLAYING APPARATUS

Ryuuzi Usami, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1983, Ser. No. 524,848

Claims priority, application Japan, Aug. 25, 1982, 57-127410[U]; Sep. 10, 1982, 57-136531[U]; Dec. 24, 1982, 57-198940[U]

Int. Cl.[4] G10B *3/10*; G10G *3/04*; G11B *5/00*

U.S. Cl. 360—4 **3 Claims**

1. An automatic music playing apparatus comprising:

a musical data input device including a plurality of keys for inputting musical data;

a digital memory coupled to said musical data input device for storing musical data inputted by said musical data input device, the musical data corresponding to at least one musical piece;

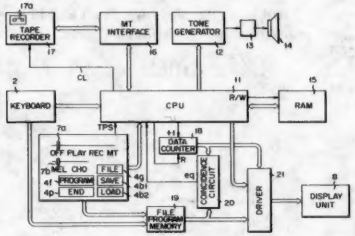
a tone generator coupled to said digital memory for generating a tone signal corresponding to musical data stored in said digital memory;

a magnetic recording/reproducing device coupled to said digital memory for recording musical data stored in said digital memory into a magnetic recording medium including a plurality of data areas each of which is provided for storing musical data of one musical piece, and for repro-

ducing musical data recorded on said magnetic recording medium;

a mode selector for selectively designating at least a first operating mode and a second operating mode, said first operating mode being designated when musical data inputted by said data input device is stored in said digital memory and said second operating mode being designated when a musical data is transferred between said digital memory and said magnetic recording/reproducing device; and

a control device coupled between said musical data input device and said digital memory, between said digital memory and said tone generator, between said digital memory and said magnetic recording/reproducing device, and to said mode selector, and including means for controlling the transfer of musical data inputted by said musical data input device to said digital memory so as to store the musical data therein, when said first operating mode is selected by said mode selector; means for controlling the transfer of musical data stored in said digital memory to



said magnetic recording medium to store said musical data into said magnetic recording medium, when said second operating mode is selected by said mode selector in response to an operation of a save key; means for controlling the transfer of musical data which was recorded in said magnetic recording medium in response to an operation of a load key, the musical data transferred from said magnetic recording medium being stored in said digital memory; means for causing, when said first operating mode is selected by said mode selector, a plurality of keys in said musical data input device to function as keys for inputting musical data; and means for causing, when said second operating mode is selected, at least some keys in said plurality of keys to function as keys for selectively designating one of a plurality of data areas of said magnetic recording medium for storing musical data; and

said control device further including means for controlling said magnetic recording/reproducing device such that a recording and reproduction operation of said musical data with respect to a designated data area of said magnetic recording medium is performed.

4,614,984

RECORDING AND/OR REPRODUCING APPARATUS WITH ARRANGEMENT FOR POSITIONING RESETTING THE HEAD

Nobuo Tezuka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1983, Ser. No. 513,164

Claims priority, application Japan, Jul. 16, 1982, 57-124262; Jul. 16, 1982, 57-124263

Int. Cl.[4] G11B *21/02, 21/22, 5/54*

U.S. Cl. 360—75 **19 Claims**

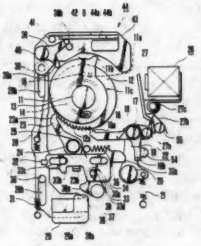
1. A recording and/or reproducing apparatus comprising:

(A) movable recording and/or reproducing head means;

(B) positioning means for positioning said head means at a selected one of positions within a predetermined range for recording and/or reproducing;

(C) reset means for resetting said head means at a predetermined position beyond said predetermined range; and

(D) shifting means for shifting said head means from said predetermined reset position to a position within said predetermined range in response to an operation for loading the apparatus with a recording medium, said position being determined by said positioning means, wherein said shifting means is arranged to cause said positioning means to position said head means from said reset position to said position within said range in response to the recording



medium loading operation, and wherein said shifting means includes detecting means for detecting the loading of said recording medium and for operating said positioning means to position said head means from said reset position to said position within said range in response to the loading of the recording medium, and further includes ejecting means for ejecting said recording medium from the apparatus, said reset means being operatively associated with said ejecting means and resetting said head means at said reset position in response to the ejection of the recording medium by the ejecting means.

4,614,985

RECORDING/REPRODUCED SIGNAL SWITCHING SYSTEM FOR A 4-HEAD TYPE RECORDING AND REPRODUCING APPARATUS

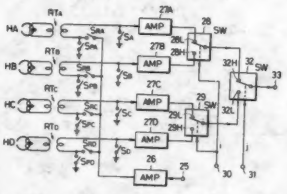
Masahiko Tsuruta, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Nov. 17, 1983, Ser. No. 552,721

Claims priority, application Japan, Nov. 18, 1982, 57-202600; Nov. 18, 1982, 57-202601; Nov. 18, 1982, 57-202602; Nov. 18, 1982, 57-202603; Nov. 18, 1982, 57-174443[U]

Int. Cl.[4] G11B *5/02, 15/14*

U.S. Cl. 360—64 **8 Claims**



1. A recording/reproduced signal switching system for a 4-head type recording and reproducing apparatus, said switching system comprising:

rotating means for rotating a rotary body at a rotational speed of 270° per unit, said unit being 1/n times one field of a video signal which is to be recorded onto and reproduced from a magnetic tape, said magnetic tape being wrapped around a peripheral surface of said rotary body over an angular range which is greater than or equal to 270° but less than 360°, said rotary body being mounted

with four heads which are equally spaced apart so that adjacent heads are separated by 90°;

tape driving means for driving said magnetic tape to travel;

four rotary transformers for performing transmission and reception of signals with respect to said four heads;

four preamplifiers respectively supplied with reproduced signals from said four heads through said four rotary transformers which are provided correspondingly;

recording switch circuit means provided between an input terminal which is applied with the recording video signal which is to be recorded and one end of each of said four rotary transformers, for selectively and successively supplying the recording video signal to one of said four heads with a period which is approximately equal to a period in which said rotary body undergoes a 270° rotation;

first reproduction switch circuit means provided between the other end of each of said four rotary transformers and an input terminal of each of said four preamplifiers, for passing a reproduced signal from one of said four heads from which the reproduced signal is to be obtained among four reproduced signals from said four heads, and for subjecting the input terminals of three of said four preamplifiers which are coupled to the remaining three heads to A.C. grounding;

second reproduction switch circuit means for selectively and successively passing one of the four reproduced signals which are obtained through said four preamplifiers; and

switching signal generating means for supplying switching signals to said recording switch circuit means and said first and second reproduction switch circuit means, said switching signals being formed based on a rotation detection pulse which is in synchronism with the rotational speed of said rotary body and is obtained from a part of said rotating means,

said recording switch circuit means being made operative and said first reproduction switch circuit means subjecting all of the input terminals of said four preamplifiers to A.C. grounding in response to said switching signals during a recording mode of said recording and reproducing apparatus,

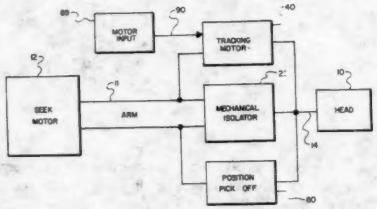
said recording switch circuit means assuming a signal blocking state and said first and second reproduction switch circuit means being made operative in response to said switching signals during a reproducing mode of said recording and reproducing apparatus.

4,614,986

MAGNETIC SERVO WITH IMPROVED TRACKING SYSTEM

Edward V. LaBudde, 3401 Daniel St., Newbury Park, Calif. 91320

Filed Oct. 31, 1983, Ser. No. 547,366
Int. Cl.[4] G11B *5/54*
U.S. Cl. 360—78 **21 Claims**



1. A method of positioning a head adjacent a moving medium comprising:

(a) moving the head through relatively small movements by tracking means;

(b) moving the tracking means and the head through larger movements between tracks of the magnetic medium by means of a seek positioning means;

(c) mechanically isolating the fine tracking means from the seek positioning means to prevent movements of the tracking means from vibrating the seek positioning means; and

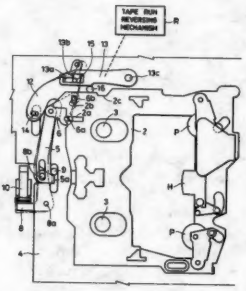
(d) locking the tracking means when the seek positioning means moves the tracking means and the head through relatively large distances.

4,614,987

MODE SELECTION DEVICE OF A TAPE DECK

Akira Sukenari, Aichi; Isao Hasegawa, Tokyo, and Yukio Ito, Saitama, all of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,744
Claims priority, application Japan, Dec. 22, 1983, 58-204726[U]
Int. Cl.[4] G11B *15/00, 17/00*
U.S. Cl. 360—93 **3 Claims**



1. A mode selection device for a tape deck including:

a drive gear to be driven by a motor and comprising:

a power cam having a non-toothed portion and intermittently rotated by the drive gear;

a power plate reciprocated by rotation of said power cam;

a plunger plate pivotable toward and away by action of a solenoid;

first pin formed on said power plate;

a key plate engageable with said first pin when said plunger plate is attracted by said solenoid and otherwise disengageable from said first pin;

a key plate link pivotably connected to said key plate;

a head plate connected to and concurrently movable with said key plate via said key plate link;

second pin formed on said power plate;

a reverse link pivotably moved by said second pin;

third pin formed on said reverse link;

a reverse plate responsive to the position of said head plate to engage or disengage said third pin;

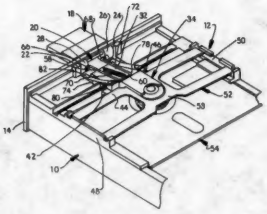
a projection formed on said power plate to limit the movement of said power plate when said plunger plate is attracted by said solenoid and otherwise released for movement; and

a guide formed on said power cam to cause said power cam to be maintained at an angular position whereat said non-toothed portion faces said drive gear when said projection limits the movement of said power plate.

4,614,988
DISC DRIVE CLUTCH ACTUATION SYSTEM

Paul H. Mahnke, Westminster, Calif., assignor to Weltec Digital, Inc., Anaheim, Calif.

Filed Nov. 21, 1983, Ser. No. 553,458
Int. Cl.[4] G11B *5/012, 5/016, 33/02*
U.S. Cl. 360—97 **4 Claims**



1. In a floppy disc drive apparatus having a front fascia with an access slot to selectively permit insertion of a disk through the slot for positioning on a main frame between a selectively engageable, vertically moveable clutch and a motor hub, a clutch actuation system comprising:

an access door associated with said access slot and having an enlarged end portion, said access door including pin means for pivotally supporting said end portion at a pivot axis on the front fascia to allow the door to move between open and closed positions on either side of a mid-open door position;

a pawl connected to said enlarged end at a pivot point offset from the pivot axis of said pin means for pulling and pushing said pawl in a generally horizontal plane;

a clutch lever mechanically coupled to said clutch and having a pivoted end connected to the main frame on an axis below the pivot axis of said door and below said pawl offset pivot point;

slot means coupled to said pawl and said clutch lever for causing said pawl to rotate said clutch lever and position the clutch between a vertically raised open position when the door is in its open position, in which an upper surface of the clutch lever is at a first inclination, and a ready position, when the door is in its mid-point position, in which the pawl pushes the clutch lever so that its upper surface is slightly inclined with respect to said first inclination;

a clutch load spring mechanically coupled to said clutch; and

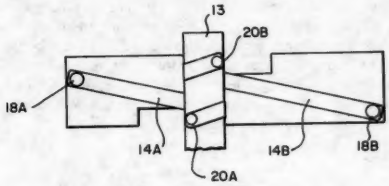
a cam profile on said enlarged end portion that engages said clutch load spring to cause it to bias the clutch into a disk-engaging drive position when the door has moved from its mid-point position toward its closed position.

4,614,989
HELICAL BAND DRIVE FOR DISC STORAGE APPARATUS

Steven Kaczeus, Santa Cruz, and Long V. Ngo, San Jose, both of Calif., assignors to Seagate Technology, Scotts Valley, Calif.

Filed Apr. 2, 1984, Ser. No. 595,894
Int. Cl.[4] G11B *5/55, 21/08*
U.S. Cl. 360—106 **7 Claims**

1. A positioning apparatus for movably controlling the position of a component between first and second positions, the component being supported for movement between said first and second positions, the apparatus comprising a drive means including a drive motor having a rotatable shaft, a pulley carried on said shaft, first and second distinct bands, one end of each said bands being fastened to to said component, the other end of each said band segment being connected to said pulley, rotation of said shaft wrapping each and unwrapping said band helically on said motor drive shaft pulley thereby permitting said pulley to rotate for at least 360°'s, each said band wrapping on the same angular cross-section of the surface area of the motor drive shaft pulley with one band wrapping onto a portion of the pulley surface area adjacent to the pulley portion left vacant by the unwrapping of the other band to move said

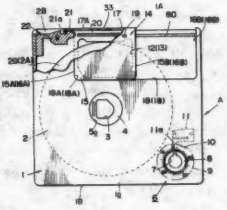


component between said first and second positions, whereby each of the bands defines an acute angle with said pulley, said pulleys being arranged in a parallel manner, with the length of the drive shaft being accordingly minimized.

4,614,990
DISC CASSETTE WITH SHUTTER AND RELEASABLE LATCH THEREFOR

Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 19, 1983, Ser. No. 515,188
Claims priority, application Japan, Jul. 19, 1982, 57-125376; Jul. 21, 1982, 57-125888
Int. Cl.[4] G11B *5/012, 5/016;* **B65D** *85/30, 85/57*
U.S. Cl. 360—133 **4 Claims**



1. a disc cassette comprising:

a generally rectangular jacket containing a record disc, said jacket having two opposed, spaced-apart panel walls between which said record disc is rotatable and a peripheral wall extending between said panel walls with a gap therein adjacent an end portion of one side of said jacket, said panel walls having openings adjacent said one side of said jacket to define a window through which the disc may be exposed, and said peripheral wall having a groove therein extending from said gap along said one side of the jacket;

a shutter movable on the jacket between open and closed positions in respect to the window and having spaced plates and a connecting portion therebetween to straddle said jacket and move along said one side thereof, said connecting portion having an opening in its outer surface at which the shutter is engageable for movement to its closed position, said connecting portion being further engageable at the end thereof directed towards said gap for movement of the shutter to its opened position;

a latch in said jacket disposed in said gap between the panel walls and having a portion displaceable inwardly and outwardly in the gap;

means yieldably resisting inward displacement of said latch portion from an operative position;

said latch portion having a notch opening outwardly in said

gap, and oppositely inclined ramps converging toward the opening of said notch and being engageable for effecting said inward displacement of the latch portion from said operative position against the force of said yieldably resisting means; and

a keeper directed inwardly from said connecting portion of said shutter and engageable in said notch of the operatively positioned latch portion at said closed position of said shutter for locking said shutter in its closed position, said keeper being released from said notch of said latch upon inward displacement of said latch portion from said operative position in the gap.

4,614,991

CASSETTE TAPE RECORDING AND/OR REPRODUCING APPARATUS

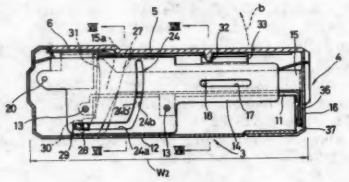
Atsushi Murakami, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 30, 1985, Ser. No. 739,434

Claims priority, application Japan, Jun. 1, 1984, 59-81785

Int. Cl.[4] G11B *5/008*

U.S. Cl. 360—137 **4 Claims**



1. A cassette tape recording and/or reproducing appataus comprising:

(a) a primary portion of a body in which a tape drive mechanism is housed;

(b) a secondary portion of said body moved slidably against said primary portion between a first position where a cassette can not be mounted and a second position where said cassette can be mounted;

(c) cover supporting means moved swingably against said primary portion of the body;

(d) a cover moved slidably against said cover supporting means and covering said cassette which is mounted in said primary portion and secondary portion of the body;

(e) guide means which is disposed in said primary portion of the body and has a first guide part parallel to the sliding direction of said secondary portion and a second guide part formed almost circularly round the fulcrum of said cover supporting means as a center in succession to said first guide part;

(f) first engagement means so disposed on said cover through a support member as to be engaged with said guide means and movable from said first guide part to said second guide part or in reverse as follows the movement of said cover; and

(g) second engagement means by which said cover is slidably moved, following the movement of said secondary portion of the body,

(h) said secondary portion of the body and said cover being so moved slidingly together by said second engagement means as to move said first engagement means along said first guide part of the guide means when said secondary portion is moved against said primary portion of the body, so that said cover is kept in its closed state, and

(i) said first engagement means being movable along said second guide part of the guide means, only when said secondary portion of the body is in said second position, so that said cover is openable and closable with rotation of said cover supporting means.

4,614,992

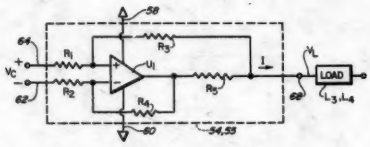
ACTUATOR DRIVER WITH OPEN-CIRCUIT AND STRAY GROUND PROTECTION

Richard K. Heiser, Wayzata, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 23, 1985, Ser. No. 768,736

Int. Cl.[4] H01H *47/22*

U.S. Cl. 361—160 **17 Claims**



1. An actuator driver circuit for controlling an actuator having a pair of parallel connected coils, comprising:

a first current source for generating a first current of a first polarity at an output terminal thereof;

the parallel connected coils including first and second common ends, the first common end being connected to the output terminal of the first current source; and

a second current source for generating a second current of a second polarity opposite the first polarity at an output terminal thereof, the second common end of the parallel connected coils being connected to the output terminal of the second current source such that the currents generated by the first and second current sources flow in the same direction through the parallel connected coils.

4,614,993

OPERATION CONTROL APPARATUS IN A COMBUSTION DEVICE

Masahiko Komura, Aichi, Japan, assignor to Rinnai Corporation, Aichi, Japan

Filed Oct. 7, 1985, Ser. No. 785,119

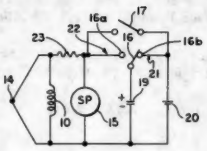
Claims priority, application Japan, Nov. 21, 1984, 59-244336

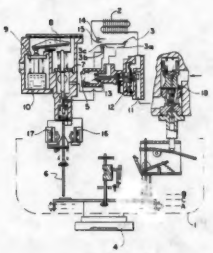
Int. Cl.[4] F23Q *3/00*; F23N *5/00*

U.S. Cl. 361—257 **11 Claims**

1. An operation control apparatus, in a combination device, comprising an operation member selectively settable at a stop position, an ignition position or an open position; an electric member which is energised by an electric power source when the operation member is set in its ignition position; and a limited time operation circuit for affecting the operation of the electric member, either by itself energising the electric member or by enabling the electric member to be energised by the power source, for a predetermined period of time; the limited time operation circuit being inoperative for affecting the operation of the electric member while the operation member is set in its ignition position and the electric member is energised by

the power source, and commencing to affect the operation of the electric member and thereafter continuing so to do for a set





period of time upon subsequent setting of the operation member in its open position.

4,614,994

ELECTRICAL WOUND CAPACITOR WITH INTERNAL SERIES CONNECTION

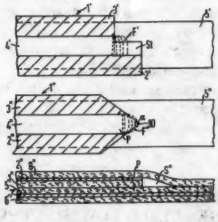
Jürgen Fetzer, Dettingen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 24, 1985, Ser. No. 726,793

Claims priority, application Fed. Rep. of Germany, May 21, 1984, 3418901

Int. Cl.[4] H01G *1/01, 4/16*

U.S. Cl. 361—303 **10 Claims**



1. An electrical wound capacitor comprising an internal series connection, particularly a damping and support capacitor that can suddenly be periodically charged and discharged, which is composed of wound paper tapes that are provided with regenerably thin metal layers, whereby two metal layers on a first paper tape are separated from one another by a free strip and a second paper tape contains a metal layer, and wherein further non-metallized filler paper tapes are co-wound with said first and second paper tapes, the improvement that the first paper tape includes a cut edge at the beginning and end of the winding in the region of the free strip, wherein said cut edge is step-shaped.

4,614,995

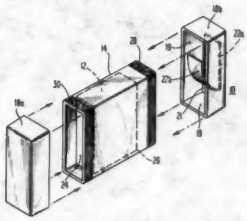
HERMETICALLY SEALED CERAMIC CASED SURFACE MOUNT CAPACITOR

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Continuation-in-part of Ser. No. 586,014, Mar. 15, 1984, Pat. No. 4,538,205. This application Nov. 1, 1984, Ser. No. 667,046

Int. Cl.[4] H01G *1/13*

U.S. Cl. 361—308 **14 Claims**



1. A planar hermetically sealed ceramic surface mount capacitor comprising:

(a) a capacitor element having first and second terminals at opposite ends thereof;

(b) a ceramic case for surrounding said capacitor element including first and second solder bands adhered to and completely encircling the outer surface of the case; and

(c) first and second metal end caps each positioned at opposite ends of the solder band encircled case wherein the first end cap surrounds the first solder band and is electrically coupled to the first terminal and the second end cap surrounds the second solder band and is electrically coupled to the second terminal and both metal end caps are secured to the solder bands along the entire perimeter of the outer surface of the case thereby hermetically sealing the capacitor.

4,614,996

CEILING ILLUMINATION APPARATUS

Nobuhiro Enaka, Tokyo; Mitsuyoshi Terada, Matsudo; Yoshiro Hashimoto, Yokohama; Shinichi Imabeppu, Matsudo; Kuninori Kobayashi, Hiroshima, and Akira Shimamura, Tokyo, all of Japan, assignors to Shimizu Construction Co., Ltd. and Yamagiwa Corporation, both of Tokyo, Japan

Filed Jul. 18, 1985, Ser. No. 756,104

Claims priority, application Japan, Jul. 19, 1984, 59-150294; Jul. 19, 1984, 59-150295

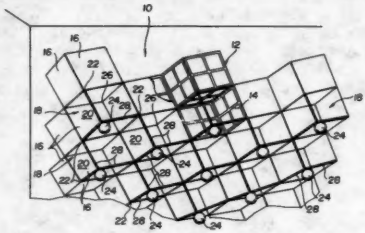
Int. Cl.[4] F21S *1/02;* F21V *9/10, 21/02*

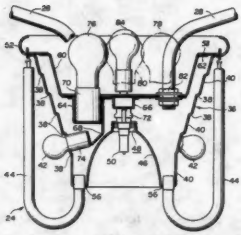
U.S. Cl. 362—147 **4 Claims**

1. In a ceiling illumination apparatus of a room in which: a wall of the ceiling has a large number of recessed wall portions formed therein in a honeycombed manner, thereby forming projected wall portions between corners of the adjacent recessed wall portions; a plurality of illumination means for electrically illuminating corresponding recessed wall portions are provided through supporting means to the ceiling; and ceiling appliances including smoke sensors, and inlets and outlets of an air conditioner, the improvement wherein:

each supporting means comprises a pipe being connected at one end thereof to a corresponding projected wall portion and at the other end thereof to a corresponding illumina-

tion means so that the the corresponding illumination means is positioned just below a corresponding recessed





wall portion; and wherein the ceiling appliances are mounted on the projected wall portions.

4,614,997

LAMP FIXING AND MOUNTING DEVICE

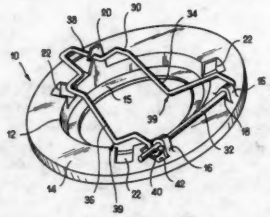
Maurice Montet, Bagnolet, France, assignor to Cibie Projecteurs, France

Filed Nov. 28, 1984, Ser. No. 675,723

Claims priority, application France, Nov. 30, 1983, 83 19131

Int. Cl.[4] F21V *19/00;* **E05D** *7/00*

U.S. Cl. 362—382 **10 Claims**



1. A lamp fixing and mounting device for fixing and mounting an electric lamp, the device being of the type comprising a lamp-supporting ring having an opening for receiving the base of a lamp, and a clip in the form of a loop of wire which is pivotally mounted to one side of the said opening to pivot between an open position in which the opening is clear and a closed position in which the clip locks a lamp in position, the device including the improvement wherein a first end of the said wire is pivotally mounted in at least one bearing provided on the said one side of the ring, and wherein the opposite end of the clip is so shaped as to present a cradle suitable for receiving a portion of the first end and for being itself received, when the clip is in the closed position, in a recess provided in the ring.

4,614,998

DC-AC CONVERTER FOR A LOAD WITH AN INDUCTIVE COMPONENT

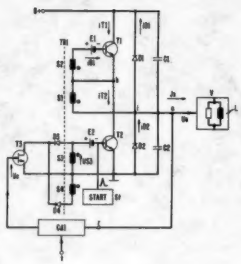
Gerard Rilly, VS-Pfaffenweiler, Fed. Rep. of Germany, assignor to Deutsche Thomson Brandt GmbH, VS-Villingen, Fed. Rep. of Germany

Filed Jan. 11, 1985, Ser. No. 690,859

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1984, 3400671

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—16 **16 Claims**



1. A DC-AC converter for energizing a load including an inductive component comprising

a direct current voltage source;

a first transistor connected with one of its power leads to the direct current voltage source an having a second power lead;

a second transistor connected with one of its power leads to the second power lead of the first transistor via a first junction point;

a load including an inductive component and having an input;

a first free wheeling diode connected with a terminal to the direct current power source and having a second terminal;

a second free wheeling diode connected with one terminal to the second terminal of the first free wheeling diode via a second junction point, which is further connected to the input of the load;

an auxiliary winding of a transformer connecting the first junction point to the second junction point;

a second control winding of the transformer connected to a control input of the second transistor and to the second power lead of the second transistor;

an electronic switch connected in parallel to the second winding of the transformer;

a control circuit connected with an output to a control input of the electronic switch and having an input connected to the second junction point for initiating a periodic switching.

4,614,999

HIGH VOLTAGE PULSED POWER SUPPLY WITH TIME LIMITING NONLINEAR FEEDBACK

Toshihiro Onodera, Tokyo; Shigeru Tanaka, and Sunao Matsumoto, both of Tochigi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Oct. 1, 1984, Ser. No. 656,726

Claims priority, application Japan, Sep. 29, 1983, 58-181263

Int. Cl.[4] H02M *3/315*

U.S. Cl. 363—28 **11 Claims**

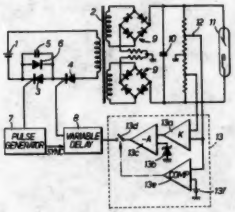
1. A high voltage pulsed direct current power supply for an X-ray rube, comprising:

a step-up transformer having a primary winding and a secondary winding;

a primary circuit including in series a source of direct cur-

rent, the transformer primary winding, and switching means operable by electrical pulses for interrupting the direct current and inducing a high voltage alternating current in said secondary winding, said switching means including pulse generating means for periodically generating the electrical pulses at a high frequency;

a secondary circuit including in series the transformer secondary winding and rectifying means for converting the



high voltage alternating current to high voltage direct current; and

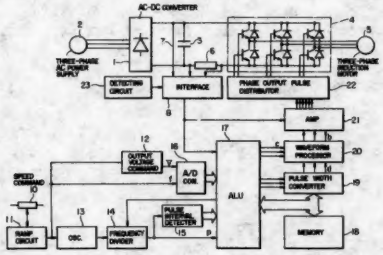
nonlinear feedback means coupled between said rectifying means and said pulse generating means for controlling the generation of the electrical pulses in accordance with the high voltage direct current, said nonlinear feedback means including a loop switch to close when the high voltage direct current is greater than a predetermined voltage.

4,615,000

PULSE WIDTH MODULATION INVERTER SYSTEM

Hiroshi Fujii, and Hideyuki Shimonabe, both of Chiba, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1985, Ser. No. 692,573
Claims priority, application Japan, Jan. 20, 1984, 59-7184
Int. Cl.[4] H02M *1/12*
U.S. Cl. 363—41 **19 Claims**



1. A PWM inverter system comprising:

an output voltage setting circuit for generating a pattern of output voltage value corresponding to a speed command value;

an oscillator for generating a pulse train having a frequency proportional to said speed command value;

a frequency division circuit for dividing the frequency of said pulse train produced by said oscillator to produce interrupt pulses;

a pulse interval measuring circuit for measuring a pulse interval between predetermined ones of said interrupt pulses supplied from said frequency division circuit;

an arithmetic unit responding to the input of said interrupt pulses from said frequency division circuit to produce a timing signal corresponding to the timing at which said interrupt pulse is inputted and update data associated with current operating phase relative to a fundamental wave, to thereby produce pulse width data corresponding to the product of $K \cdot Tc \cdot V \cdot \sin \omega t$, where V represents the output voltage value supplied from said voltage setting circuit, T_c represents the pulse intergal supplied from said pulse interval measuring circuit, ωt represents the operating phase relative to said fundamental wave, and K represents a proportional constant;

a pulse width conversion circuit supplied with said pulse width data from said arithmetic unit for producing a width pulse train conforming to said pulse width data at every timing signal supplied from said arithmetic unit; and

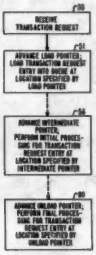
a waveform processing circuit supplied with said width pulse train from said pulse width conversion circuit and said timing signal from said arithmetic unit to produce sequentially phase output pulse trains.

4,615,001

QUEUING ARRANGEMENT FOR INITIATING EXECUTION OF MULTISTAGE TRANSACTIONS

Walter R. Hudgins, Jr., Elburn, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1984, Ser. No. 594,852
Int. Cl.[4] G06F *1/00, 9/46*
U.S. Cl. 364—200 **11 Claims**


RECEIVE TRANSACTION REQUEST
ADVANCE LOAD POINTER, LOAD TRANSACTION REQUEST ENTRY INTO QUEUE AT LOCATION SPECIFIED BY LOAD POINTER
ADVANCE INTERMEDIATE POINTER, PERFORM INITIAL PROCESSING FOR TRANSACTION REQUEST ENTRY AT LOCATION SPECIFIED BY INTERMEDIATE POINTER
ADVANCE UNLOAD POINTER, PERFORM FINAL PROCESSING FOR TRANSACTION REQUEST ENTRY AT LOCATION SPECIFIED BY UNLOAD POINTER

4. In a data processing system for sequentially generating transaction requests, each of said transaction requests requesting performance of initial and final processing, a FIFO queue control arrangement comprising:

a FIFO queue for storing transaction request entries, each of said transaction request entries corresponding to one of said transaction requests;

a load indicator comprising data for deriving the location in said queue where the next of said transaction request entries is to be loaded;

a first intermediate indicator comprising data for deriving the location in said queue of the next one of said transaction request entries for which initial processing is to be performed;

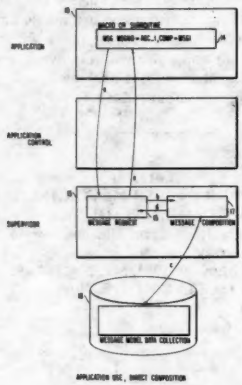
an unload indicator comprising data for deriving the location in said queue of the next one of said transaction request entries for which final processing is to be performed; and

processor means responsive to said load indicator for controlling loading into said queue of each of said transaction request entries sequentially in a predetermined sequence, responsive to said first intermediate indicator for initially processing each of said transaction request entries sequentially in said predetermined sequence, responsive to said unload indicator for finally processing each of said transaction request entries sequentially in said predetermined sequence, and responsive to said first intermediate indicator and said unload indicator for performing initial processing before final processing for each of said transaction request entries.

4,615,002
CONCURRENT MULTI-LINGUAL USE IN DATA PROCESSING SYSTEM

John G. Innes, Arlington, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,418
Int. Cl.[4] G06F *9/40, 9/44, 9/46, 15/38*
U.S. Cl. 364—200 20 Claims



1. A method of providing a distributed, interactive data processing system with concurrent multi-lingual use by a plurality of users having different national language preferences comprising the steps of:

establishing a message model data collection by storing message models via a message identifier call from an application control program,

said call comprising the step of requesting message composition service using a control statement,

said control statement requesting composition of a message model into a variable and passing control to said message composition service in a supervisor program,

wherein the step of composing comprises the steps of using said message composition service in said supervisor program, obtaining the correct message model from said message model data collection using the message model identification and said secondary key and storing the resulting text as the value of said variable and returning control to said application control program following said control statement; and

communicating the composed messages to users in their national language preference.

4,615,003
CONDITION CONCENTRATOR AND CONTROL STORE FOR A REDUCTION PROCESSOR EVALUATING PROGRAMS STORED AS BINARY DIRECTED GRAPHS EMPLOYING VARIABLE-FREE APPLICATIVE LANGUAGE CODES

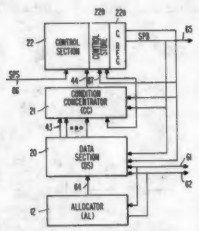
Gary L. Logsdon, and Mark R. Scheevel, both of Austin, Tex., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 5, 1984, Ser. No. 617,532
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—200 10 Claims

1. In a reduction processing system having storage means for receiving two-cell nodes representing binary directed graphs employing a variable-free applicative language code, one of such cells in some of each nodes containing a storage address of another node, another of said cells in some of each nodes containing a code representing a functional variable and another of said cells in some of each nodes containing a variable-free operator code specifying a function substitution, a processor comprising:

a plurality of registers coupled to said storage means for receiving a plurality of said nodes for reduction by a function substitution;

condition testing means coupled to various fields of said



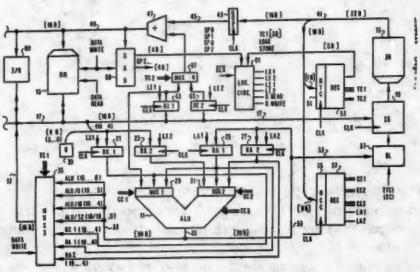
registers containing said nodes to detect what function substitution is to be performed and to generate a displacement address therefrom; and

control store means coupled to said condition detection means for receiving said displacement address to retrieve a set of control signals to activate transfer between said registers to accomplish said function substitution.

4,615,004
MICROPROCESSOR INCLUDING MEANS FOR CONCURRENTLY COPYING ALU RESULTS INTO SELECTED OPERAND REGISTER SUBSETS AND AT LEAST ONE MAIN MEMORY LOCATIONS

Pierre R. Chevillat, Adliswil; Hans P. Kaeser, Thalwil; Dietrich G. U. Maiwald, Waedenswil, and Gottfried Ungerboeck, Langnau am Albis, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 373,071, Apr. 29, 1982, abandoned.
This application Dec. 13, 1984, Ser. No. 681,047
Claims priority, application European Pat. Off., Aug. 19, 1981, 81106430.2
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 1 Claim



1. A microprocessor having a memory for storing sequences of instructions and data, each instruction including an operation and address part; a decoder responsive to an instruction for generating control signal and address outputs; an arithmetic logic unit for combining operands stored in one or more of a plurality of operand registers; means responsive to the outputs from the decoder for extracting instructions from the memory and applying the extracted instructions to the decoder; and means for copying operands from one or more of the operand registers to and from the memory, the operand registers, and the arithmetic logic unit;

said microprocessor further comprising:

means forming part of the copying means and operatively responsive to the outputs of the decoder for concurrently copying operands constituting combined operands from the arithmetic logic unit to a subset of the operand registers and at least one location in the memory selected as a function of the control signal outputs constituting a decoded operation part of an instruction.

4,615,005

DATA PROCESSING APPARATUS WITH CLOCK SIGNAL CONTROL BY MICROINSTRUCTION FOR REDUCED POWER CONSUMPTION AND METHOD THEREFOR

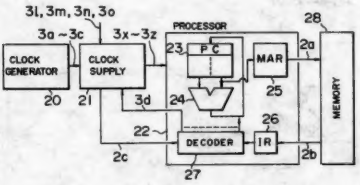
Hideo Maejima; Koyo Katsura, both of Hitachi; Toshimasa Kihara, Tachikawa, and Yasushi Akao, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 315,058, Oct. 26, 1981, abandoned. This application Jul. 20, 1984, Ser. No. 632,820

Claims priority, application Japan, Oct. 27, 1980, 55-150900

Int. Cl.[4] G06F *11/00, 7/38*

U.S. Cl. 364—200 **32 Claims**



1. In a data processing apparatus for carrying out data processing, including data processing means having logic circuits including C-MOS devices, memory means for storing at least one data processing program, clock signal generating means for generating a clock signal to be supplied to said data processing means including said logic circuits, and clock signal supplying means for controlling the supply of said clock signal to said data processing means including said logic circuits, said data processing program including a plurality of data processing instructions, said data processing means operating to successively read out said data processing instructions stored in said memory means to carry out various operations including data processing, said clock signal having a first potential level and a second potential level which is different from said first potential level, said first and second potential levels repeating in turn at a predetermined clock period,

a method of controlling the supply of said clock signal to said data processing means including said logic circuits comprising the steps of:

storing data processing instructions including at least one clock signal supply inhibit instruction in said memory means prior to carrying out data processing;

reading out each of said data processing instructions from said memory means;

decoding and identifying each of said data processing instructions read out of said memory means including said clock signal supply inhibit instruction; and

generating a clock signal supply stopping signal and supplying said clock signal supply stopping signal to said clock signal supplying means when any one of said data processing instructions is identified as the clock signal supply inhibit instruction to inhibit said clock signal from being supplied from said clock signal generating means to a predetermined part of said data processing means having logic circuits by maintaining the potential level of said clock signal supplied to said predetermined part at said first potential level or said second potential level, whereby power consumption in said logic circuit is reduced.

4,615,006

PHYSICAL ADDRESS DEVELOPING UNIT

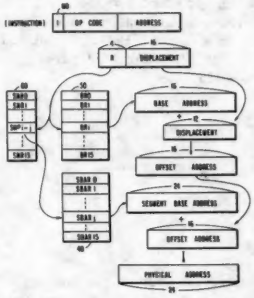
Nariaki Hirano, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 265,122, May 19, 1981. This application Dec. 18, 1984, Ser. No. 682,956

Claims priority, application Japan, Jun. 6, 1980, 55-76429

Int. Cl.[4] G06F *12/06*

U.S. Cl. 364—200 **5 Claims**



1. A physical address developing unit provided at a central processing unit to develop a physical address, for accessing a main memory unit (MMU) whose field is divided into at least one segment, said address developing unit comprising:

a plurality of base registers (**50**) for storing a plurality of base offset addresses in said segment;

a plurality of segment base address registers (**40**) for storing at least one address allotted for said segment;

a plurality of segment number registors (**60**) having one-to-one correspondence to said base registers for storing the numbers allotted for each of said segment base address registers;

instruction storing means for storing a given instruction having a control field having a first value and a second value, said instruction further including an address field having first and second fields, said first field designating one of said plurality of base registers and one of said plurality of segment number registers, and said second field of said address field indicating the displacement from the base offset address stored in said one base register designated by said first field;

first means coupled to said instruction storing means for determining whether said control field has said first value or said second value;

address storing means coupled to said first means and said instruction storing means for storing a first address corresponding to said first field when said control field has said first value and for storing a first address having a particular value when said control field has said second value;

first address developing means coupled to said instruction storing means and said address storing means for developing a memory offset address for accessing said MMU by obtaining the sum of the base offset address of the base register designated by said first address and the displacement as indicated by said second field of the instruction when said control field has said first value, and when said control field has the second value, said address field comprising said memory offset address; and

second address developing means coupled to said address storing means to said first address developing means for developing a final physical address for accessing said MMU by obtaining the sum of the memory offset address given by said first address developing means and the segment base address in the segment base address register designated by the segment number register which is designated by said first address whereby the address develop-

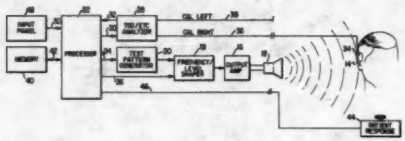
ing unit can selectively execute two different kinds of addressing operations either using the base registers or without the base registers.

4,615,007

AUDIOLOGIC TESTING METHOD AND APPARATUS WITH COMPENSATING MEANS FOR SOUNDWAVE ATTENUATION THROUGH A TRANSMITTING MEDIUM

James T. King, and Charles W. Beatty, Jr., both of Longview, Tex., assignors to Audiometrics, Inc., Longview, Tex.

Filed Sep. 14, 1984, Ser. No. 651,118
Int. Cl.[4] G06F *15/42*; H04R *29/00*
U.S. Cl. 364—415 **20 Claims**



1. An apparatus for audiological testing, comprising:
signal generator means for generating test signals;
source means for receiving said test signals and generating soundwaves corresponding to said test signals;
means for measuring the attenuation of a testing medium between said source means and a remote sense point as a function of frequency of said test signals
means for generating a calibration response curve, said calibration response curve comprised of deviation levels for each generated frequency of each of said test signals, said deviation being equal to the attenuation of said test medium;
means for storing said calibration response curve;
level means for varying the level of the generated soundwaves generated by said source means; and
processor means for controlling said signal generator means to generate said test signals in accordance with a predetermined pattern and controlling said level means to adjust the level of said soundwaves output by said source means in accordance with said stored calibration response curve such that a compensated sound pressure level can be delivered to said sense point.

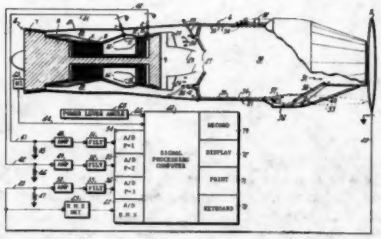
10. An apparatus for audiological testing of a patient, comprising:
a signal generator for generating test signals;
variable attenuator means for receiving said test signals and varying the level thereof;
transducer means for receiving the output of said attenuator means and converting said attenuated test signals to soundwaves for transmission through a test medium;
a receiving transducer disposed proximate the ear of a patient for receiving said transmitted soundwaves;
a time delay spectrometer for controlling said signal generator to generate a chirp signal and measure frequency response of the received chirp signal at said receiving transducer to determine the variation of level as a function of frequency and the transmission medium in accordance with time delay spectrometry techniques;
means for generating a calibration response curve, said calibration response curve comprised of deviation levels for each generated frequency of each of said test signals, said deviation being equal to the attenuation of said test medium for each frequency;
means for storing said calibration response curve;
means for storing a predetermined test pattern, said test pattern defining said test signals to be generated and the sequence thereof; and
a processor for controlling said signal generator means and said attenuator means to output said test signals in accordance with said predetermined pattern and said calibration response curve, the frequency of said test signals determined by said predetermined pattern and the level of said test signals determined by said predetermined pattern in combination with said stored calibration response curve such that the desired sound pressure level is delivered to the ear of the patient.

4,615,008

PULSE RECORD DATA CAPTURE FOR ELECTROSTATIC ENGINE DIAGNOSTICS

David M. Rosenbush, Granby, Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 454,123
Int. Cl.[4] G01M *15/00*
U.S. Cl. 364—431.02 **2 Claims**



1. Electrostatic diagnostic apparatus for distinctly recognizing different events occuring in an operating gas turbine engine, comprising:
electrostatic signal means, including a probe to be disposed in he gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe;
an analog to digital converter connected for response to said electrostatic signal means; and
digital signal processing means connected to said analog to digital converter
(a) for causing said analog to digital converter to sample the signal provided by said electrostatic signal means in a manner to provide a record of digital signals indicative of the amplitude variations therein defining the waveshape thereof,
(b) for storing in a history buffer a contiguous sequences of said digital signal, said sequence containing at least a first number of said signals, and
(c) for storing in a record buffer, in response to the amplitude of one of said digital signals being in excess of a threshold magnitude, a record comprising
(1) said first number of said digital signals stored in said history buffer immediately preceding the one of said digital signals which is in excess of said threshold magnitude and
(2) a contiguous sequence of said digital signals sufficient to define the waveshape of said probe signal.

4,615,009

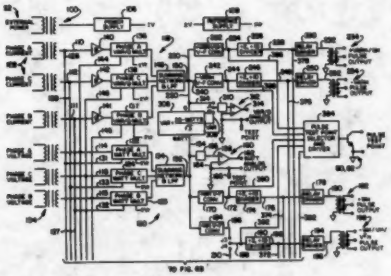
ELECTRONIC ENERGY AND POWER MONITORING APPARATUS

Frank E. Battocletti, Columbus, and Scott H. Hammond, Hilliard, both of Ohio, assignors to TransData, Inc., Dublin, Ohio

Filed Feb. 16, 1983, Ser. No. 466,729

Int. Cl.[4] G01R *21/133, 22/00;* **H01H** *9/20;* **H02B** *11/16*

U.S. Cl. 364—483 **20 Claims**



1. An assembly for monitoring an electrical power supply exhibiting given power and phase characteristics comprising:

a housing having a rear wall and spaced apart peripheral walls defining an interior cavity extending inwardly from an opening;

a plurality of discrete, spaced first conductors mounted upon a select said peripheral wall within said cavity;

polyphase terminal means connected to an outwardly disposed surface of said housing, electrically communicating with said first conductors, for removable connection with a monitoring input from said power supply;

a plurality of signal output terminals mounted upon and extending through and outwardly from a said wall and having a receptor portion within said cavity at a predetermined position;

a drawout cradle, slidably nestable within said housing cavity having receiving means for supporting a plurality of electrical circuit components, a first portion thereof supporting a plurality of discrete second conductors spaced outwardly from said first conductors when said cradle is nestably positioned within said cavity and said cradle having a multi-conductor electrical connector located to be operationally engageable in multi-path electrically conducting relationship with said signal output terminals receptor portion when said cradle is nestably positioned within said cavity;

connection plug means having a plurality of discrete spaced conductors selectively contactable with said first conductors and said second conductors when inserted within said housing cavity intermediate said select peripheral wall and said drawout cradle first portion for effecting the conduction of electricity from said first conductors to said second conductors;

three monitoring function voltage transformers and three monitoring function current transformers mounted upon said drawout cradle, each electrically coupled with a predetermined said second conductor for being energized from said polyphase terminal means with respect to a select phase and having outputs corresponding therewith;

readout means including a forward panel having a display providing visual digital data corresponding with electrical parameter signals and including processor means for selecting said electrical parameter signals for effecting said display provision of data, said readout means being mounted upon said drawout cradle, said panel being positioned at said housing opening when said cradle is nestably positioned with said cavity;

multiplier circuit means mounted upon said drawout cradle, coupled to receive the outputs of said current and voltage transformers and coupled with said readout means and select conductors of said multi-conductor electrical connector for deriving said electrical parameter signals and for asserting said electrical parameter signals at said signal output terminals; and

power supply means connectable with a source of power for effecting energization of said readout means and said multiplier circuit means.

4,615,010

FIELD EFFECT TRANSISTOR (FET) CASCODE CURRENT SWITCH (FCCS)

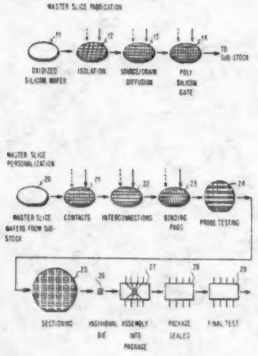
James W. Davis, Boca Raton, Fla., and Frank D. Jones, Wallkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1983, Ser. No. 508,393

The portion of the term of this patent subsequent to Aug. 19, 2003, has been disclaimed.

Int. Cl.[4] H03K *19/094, 19/173*

U.S. Cl. 364—491 **2 Claims**



1. A method of fabricating a master slice wafer for stockpiling in a substock awaiting further steps in defining a completed functional product incorporating Field Effect Transistor Cascode Current Switch (FCCS) circuits, comprising:

(1) locating a silicon wafer; and

(2) processing said wafer to establish an isolation region, a source/drain diffusion region, and a polysilicon gate region thereon, whereby the vertical structures of all the active components on the wafer is complete, the processing steps being controlled to produce a completed masterslice comprised of two general areas of microblocks including an input/output cell perimeter and a FCCS logic array of Field Effect Transistors arranged into device rails including associated power rails, the microblocks being cascoded into binary decision trees terminated by depletion mode devices for developing logic signals and setting current levels.

4,615,011

ITERATIVE METHOD FOR ESTABLISHING CONNECTIONS AND RESULTING PRODUCT

Ralph Linsker, Scarsdale, N.Y., assignor to IBM, Yorktown Heights, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,754

Int. Cl.[4] G06F *7/00*

U.S. Cl. 364—491 **41 Claims**

1. A method of establishing a plurality of connections, using global routing techniques on a data processing machine, each connection joining two pins using links arranged between nodes in a rectangular grid having X and Y coordinates in one or more planes labelled by a Z coordinate, wherein said con-

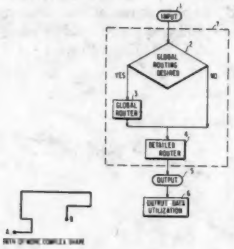
nections are formed substantially from I, L, Z and U-shaped paths comprising the steps of:

(a) inputting information to said data processing machine pertaining to grid specifications and connection listings;

(b) randomly assigning an initial path for each connection on said grid using a randomly oriented substantially L-shaped path, unless said pins lie along the same X or Y coordinate in which case an I-shaped path is used, and randomly assigning each of said initial paths to one of said one or more planes;

(c) beginning a pass through said connections by defining a penalty function in terms of specified costs;

(d) selecting one of said connections which has not been considered previously during this pass through said connections which pass was initiated in step c) and removing from said grid the path assigned to said selected connection;



(e) calculating said penalty function for each of the substantially I, L, Z, and U-shaped paths which joins the two pins of said selected connection and whose length does not exceed a specified value;

(f) selecting one of said paths based on the value of said penalty function;

(g) assigning said selected path to said selected connection;

(h) repeating steps (d) through (g) above until a desired number of connections have been routed thereby completing a pass;

(i) generating data describing X, Y and Z coordinates of the paths assigned to said routed connections;

(j) repeating steps (c) through (i) above until a desired number of passes have been completed; and

(k) utilizing said data to establish said plurality of connections corresponding to said data.

4,615,012

METHOD OF GENERATING CHARACTER PATTERNS

Shuichi Arazu; Tadao Tamukai, both of Tamayama, and Kyuichi Fujisawa, Tonan, all of Japan, assignors to Alps Electric Co., Ltd., Japan

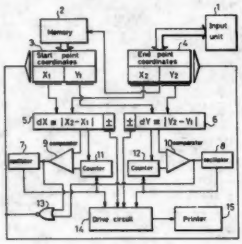
Filed Dec. 9, 1983, Ser. No. 559,913
Claims priority, application Japan, Dec. 9, 1982, 57-216211
Int. Cl.[4] G06F *15/626, 3/13*
U.S. Cl. 364—520 **6 Claims**

1. A method for generating a character pattern which includes a first line of predetermined inclination linked to a second line which is horizontal or vertical with respect to a coordinate grid where the unlinked ends of said first and second lines define respectively a start point and an end point, comprising the steps of:

providing horizontal and vertical coordinates of said start and end points to an arithmetic processor,

determining the direction in which the first line must travel in order to approach the end point from said starting point,

generating a direction polarity signal based on said determination,



drawing the first line in the direction indicated by said direction polarity signal by generating horizontal and vertical drive signals responsive to said direction polarity signal, and

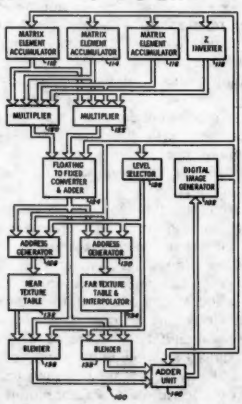
stopping the respective one of said two drive signals when the respective horizontal or vertical coordinate of the first line being drawn equals a respective horizontal or vertical coordinate of the end point so that the second line having no inclination is drawn thereby.

4,615,013

METHOD AND APPARATUS FOR TEXTURE GENERATION

Johnson K. Yan, Milpitas; Nicholas S. Szabo, Cupertino, and Lish-Yann Chen, Milpitas, all of Calif., assignors to The Singer Company, Binghamton, N.Y.

Filed Aug. 2, 1983, Ser. No. 519,602
Int. Cl.[4] G09B *9/08*
U.S. Cl. 364—521 **17 Claims**



1. A method for generating texture for each pixel which is to receive texture of an image generated by a digital image generator, the method comprising in combination the steps of:

obtaining texture modulation intensities;

processing said texture modulation intensities to develop therefrom intensities suitable for storage;

storing said processed intensities as elements of a texture table;

thereafter, inverse transforming to earth coordinates two of the coordinates of the pixel;

processing said earth coordinates, to develop therefrom at least one texture table addresses;

accessing said texture table with said address to retrieve at least one addressed element; and

processing said retrieved element to develop therefrom a texture intensity appropriate for said pixel for combination with the intrinsic intensity for said pixel generated by the digital image generator to develop an intensity suitable for use by said digital image generator in painting said pixel.

4,615,014

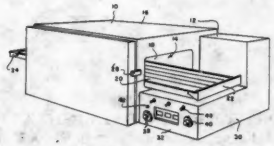
BAKE TIME DISPLAY FOR COOKING OVEN

Richard W. Gigandet, Fort Wayne, and Stephen A. Batti, Martinsville, both of Ind., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Apr. 16, 1984, Ser. No. 601,236

Int. Cl.[4] G06F *15/46*

U.S. Cl. 364—557 **20 Claims**



1. A bake time display system in a food cooking oven which includes a drive motor and a food conveyor comprising: speed transduceer means operatively coupled to the motor and conveyor of the cooking oven for generating a speed signal proportional to the speed of said conveyor, programmed computing circuit means connected to receive said speed signal for obtaining a plurality of speed samples and computing therefrom the average baking time of food transported through said oven on said conveyor and displaying said computed average baking time on a visual display, said computing means periodically and repetitively computing the average baking time and comparing each computed average baking time to the baking time currently displayed and updating the displayed baking time with the baking time most recently computed if the most recently computed baking time differs from the display baking time by more than a predetermined limit.

4,615,015

SELF-CONTAINED ELECTRONIC COMPUTER INCLUDING MEANS FOR IMMEDIATELY EXECUTING OR STORING ALPHANUMERIC STATEMENTS ENTERED INTO THE COMPUTER

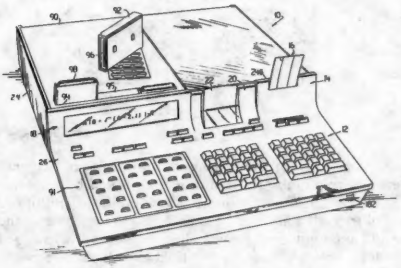
Emil E. Olander, Jr., Fort Collins; Rex I. James, Loveland; Ivar W. Larson, Loveland; Wayne F. Covington, Loveland; Jack M. Walden, Loveland; Robert E. Watson, Loveland; Francis J. Yockey, Loveland; Fred Wenninger, Jr., Loveland, and Homer C. Russell, Berthoud, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 232,087, Feb. 6, 1981, Pat. No. 4,456,964, which is a division of Ser. No. 51,581, Jun. 25, 1979, Pat. No. 4,281,390, which is a division of Ser. No. 802,323, Jun. 1, 1977, Pat. No. 4,178,633, which is a division of Ser. No. 510,921, Sep. 30, 1974, Pat. No. 4,028,538, which is a division of Ser. No. 212,581, Dec. 27, 1971, Pat. No. 3,839,630. This application Sep. 29, 1982, Ser. No. 427,338

The portion of the term of this patent subsequent to Oct. 1, 1991, has been disclaimed.

Int. Cl.[4] G06F *7/38, 9/06*

U.S. Cl. 364—706 **3 Claims**



1. A self-contained electric electronic computer comprising:

keyboard input means, including a plurality of keys, for entering lines of one or more alphanumeric statements each into the computer;

buffer storage means, coupled to said keyboard input means, for storing each line of one or more alphanumeric statements as it is entered into the computer from said keyboard input means;

first memory means, for storing a program of lines of one or more alphanumeric statements each entered into the computer;

second memory means for storing a plurality of routines and subroutines to be performed by the computer in executing and storing lines of one or more alphanumeric statements each;

processing means, coupled to said keyboard input means, buffer storage means, and first and second memory means, for selectively processing either a line of one or more alphanumeric statements entered into the computer and stored in said buffer storage means or a program of lines of one or more alphanumeric statements stored in said first memory means to perform selected functions; and

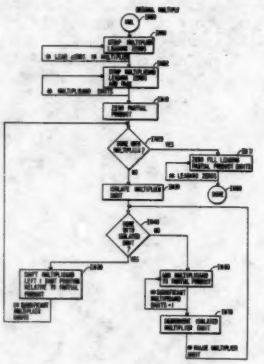
output means, coupled to said processing means, for providing an output indication of the results of selected functions performed by the computer;

said keyboard input means including control means for conditioning the processing means to selectively execute a line of one or more alphanumeric statements entered into the computer and stored in said buffer storage means or to store that entered line of one or more alphanumeric statements as part of a program in said first memory means.

4,615,016
APPARATUS FOR PERFORMING SIMPLIFIED DECIMAL MULTIPLICATION BY STRIPPING LEADING ZEROES

John J. Bradley, Framingham; Brian L. Stoffers, No. Billerica; Theodore R. Staplin, Jr., Chelmsford, and Melinda A. Widen, Arlington, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 30, 1983, Ser. No. 537,910
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—756 **4 Claims**



3. Apparatus for simplifying multiplication of decimal numbers wherein multiplication is accomplished by the technique of summation of partial products wherein the multiplicand is added to itself a number of times equal to the value of the least significant digit in the multiplier to thereby create a partial product, then shifting the multiplicand digits one position to the left and adding the once shifted multiplicand to the partial product a number of times equal to the value of the second least significant digit of the multiplier, then repeating the multiplicand digit position shift and repeatedly adding it to the partial product depending on the value of the next least significant digit of the multiplier until all multiplier digits have been used in adding the repeatedly shifted multiplicand to the partial product to thereby obtain a final product of the multiplier and multiplicand, the improvement comprising:

means for counting the total number of zeroes in the higher order digit positions of both the multiplier and multiplicand before the first highest order non-zero digit in each of the multiplier and multiplicand,

means for removing the zeroes that have been counted by the counting means from the multiplier and multiplicand to thereby minimize their length before multiplication is accomplished using partial product summation, and

means for prefixing the total number of zeroes counted by said counting means to the higher order end of the partial product to derive the final product of the multiplier and multiplicand.

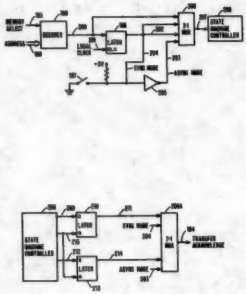
4,615,017
MEMORY CONTROLLER WITH SYNCHRONOUS OR ASYNCHRONOUS INTERFACE

David E. Finlay, Boulder; Kent S. Norgren, and Frankie S. Shook, both of Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,397
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—900 **6 Claims**

1. An interface circuit for connecting a bus system with memory controller means to supply a memory access request signal from said bus system to said memory controller means, said controller means for carrying out internal memory operations in accordance with said memory access request signal and for generating a response signal when those operations are complete, said interface circuit connected to receive said response signal and for supplying said response signal to said bus system, said interface circuit connected to either a synchronous bus system or an asynchronous bus system, said interface circuit comprising:

switch means for supplying a signal indicative of the type of bus system to which said interface circuit is connected, for passing a synchronous mode signal if synchronous type is indicated and for passing an asynchronous mode signal if asynchronous type is indicated;



receiving means for receiving said memory access request signal from said bus system;

synchronizing means connected to receive said memory access request signal from said receiving means and for synchronizing said memory access request signal with the timing of said controller means; and

logic circuit means connected between said synchronizing means and said controller means and also connected to said switch means for receiving the synchronous and asynchronous mode signals from said switch means and for passing said memory access request signal to said controller means.

4,615,018
METHOD FOR WRITING DATA INTO A MEMORY

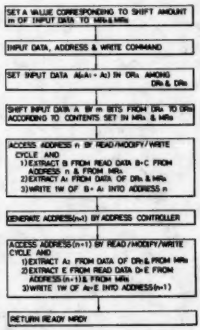
Yukio Sakano, Fuchu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,594
Claims priority, application Japan, Mar. 24, 1983, 58-49329; Apr. 8, 1983, 58-61989; Apr. 14, 1983, 58-66224; Apr. 20, 1983, 58-69347
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—900 **10 Claims**

1. A method for writing data into a memory, in which data is written word by word and data is stored pixel by pixel, of a memory system for writing data into said memory by providing input data, its address and write command under the control of a CPU, said system including a shift register having a first area, into which said input data is set, and a second area; a mask register into which input mask data is set; and an address adder for adding a predetermined number to a first input address to generate a second address, said method comprising the steps of:

shifting the data set in said shift register to said second area in accordance with the data set in said mask register;

writing the data in said first area into a first address of said memory at a first timing; and


① SET A VALUE CORRESPONDING TO SHIFT AMOUNT m OF INPUT DATA TO MR& MR
② INPUT DATA, ADDRESS & WRITE COMMAND
③ SET INPUT DATA A(A1 = A2) IN DR1 AMONG DR& & DR
④ SHIFT INPUT DATA A BY m BITS FROM DR1 TO DR2 ACCORDING TO CONTENTS SET IN MR1 & MR2
⑤ ACCESS ADDRESS n BY READ/MODIFY/WRITE CYCLE AND
1) EXTRACT B FROM READ DATA B+C FROM ADDRESS n & FROM MR2
2) EXTRACT A1 FROM DATA OF DR1 & MR1
3) WRITE 1W OF B+A1 INTO ADDRESS n
⑥ GENERATE ADDRESS(n+1) BY ADDRESS CONTROLLER
⑦ ACCESS ADDRESS(n+1) BY READ/MODIFY/WRITE CYCLE AND
1) EXTRACT A2 FROM DATA OF DR2 & FROM MR2
2) EXTRACT E FROM READ DATA D+E FROM ADDRESS(n+1) & FROM MR2
3) WRITE 1W OF A2+E INTO ADDRESS(n+1)
⑧ RETURN READY MRDY

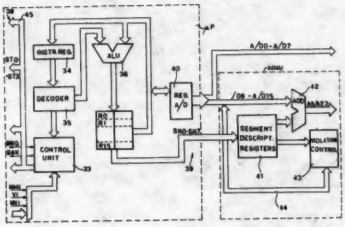
writing the data in said second area into a second address of said memory at a second timing.

4,615,019

DATA PROCESSING SYSTEM WITH INTERRUPT FACILITIES

Franco Bonci, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 28, 1982, Ser. No. 437,322
Claims priority, application Italy, Nov. 13, 1981, 68475 A/81
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 **5 Claims**



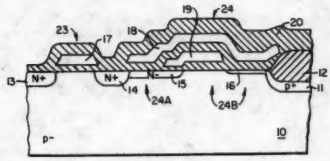
1. A data processing system including a central processing unit, a plurality of input-output units connected to said central processing unit by means of a system bus, a plurality of circuits for generating corresponding vectored interrupts for said central processing unit, each one of said circuits being associated with one of said input-output units, wherein the improvement includes first means for connecting a first group of said circuits in a first daisy chain departing from the central processing unit to generate interrupts of a higher level in such a manner that the relative priority of the associated input-output units depends on the relative position of the connection in said first daisy chain in a predetermined direction, second means for connecting a second group of said circuits in a second daisy chain departing from said central processing unit to generate interrupts of a lower level in such a manner that the relative priority of the associated input-output units depends on the relative position of the connection in said second daisy chain in a direction opposite to said predetermined direction, and means for directly connecting the circuit generating the interrupt of the lowest relative priority in said first daisy chain with the circuit generating the interrupt of the highest relative priority in said second daisy chain.

4,615,020

NONVOLATILE DYNAMIC RAM CIRCUIT

Darrell D. Rinerson, Santa Cruz, and Patrick T. Chuang, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 6, 1983, Ser. No. 558,647
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—184 **17 Claims**



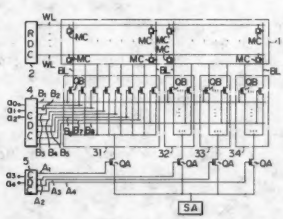
1. A memory cell comprising
a first transistor having a first terminal coupled to an input-/output line, a second terminal and a control terminal for coupling said first terminal to said second terminal responsive to control signals,
a first storage capacitor coupled to said second terminal,
a second storage capacitor,
a second transistor, having a floating gate, coupled between said first and second capacitors in such manner that said second storage capacitor is coupled to said first storage capacitor depending upon the presence or absence of charge on said floating gate, and
said memory cell storing information with only said first storage capacitor when said floating gate is charged and said memory cell storing information with both said first storage capacitor and said second storage capacitor when said floating gate is discharged.

4,615,021

SEMICONDUCTOR MEMORY DEVICE

Masanobu Yoshida, Kawaguchi, and Kiyoshi Itano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 8, 1984, Ser. No. 577,998
Claims priority, application Japan, Feb. 10, 1983, 58-019597
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—189 **4 Claims**



1. A simiconductor memory device comprising:
a plurality of bit line groups, each including a plurality of bit lines extending along a column direction; and
a plurality of bit line selection transistor arrays, each including a plurality of bit line selection transistors corresponding to said bit lines, said bit line selection transistors having gates and drains, said bit line selection transistor arrays respectively corresponding to said bit line groups;
said bit line selection transistor arrays being arranged substantially perpendicular to the column direction along which said bit lines extend;
said plurality of bit line selection transistors in each of said

bit line selection transistor arrays being arranged along the column direction along which said bit lines extend;

the gates of said bit line selection transistors being arranged substantially perpendicular to the column direction along which said bit lines extend;

the gates of said bit line selection transistors in each of said bit line selection transistor arrays being extended to connect to the gates of corresponding transistors in adjoining bit line selection transistor arrays;

each of said bit lines being connected to the drain of the corresponding one of said bit line transistors;

at least one of said bit lines crossing over at least one of said bit line selection transistors, other than the corresponding one of said bit line selection transistors, in each of said bit line selection transistor arrays.

4,615,022

SYMMETRICALLY-SUSPENDED VERTICAL-SWING LONG-PERIOD PENDULUM MEANS

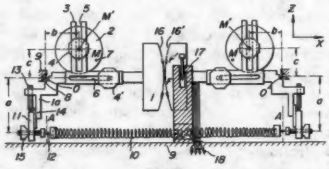
Ikuei Muramatsu, Gifu, Japan, assignor to Gifu University, Gifu, Japan

Filed Mar. 18, 1985, Ser. No. 712,777

Claims priority, application Japan, May 19, 1984, 59-99702

Int. Cl.[4] G01C *9/12;* **G01V** *1/16;* **H04R** *15/00*

U.S. Cl. 367—179 **1 Claim**



1. A symmetrically-suspended vertical-swing long-period pendulum means, comprising a pedestal, two identical sector-shaped pendulums supported by crossed leaf springs, which are the axes of rotation, extending from said pedestal at horizontally aligned two axes in a laterally symmetrical manner so that said pendulum can swing vertically on substantially one common vertical plane about said axes thereof respectively, each of said pendulums having a sector-shaped surface with a center of curvature thereof located at said axis thereof, the sector-shaped surfaces of the two pendulums disposed so as to face each other and being connected to each other by mutually-crossing flexible wires, each pendulum having a rigid extension integrally formed therewith so as to extend downward and a weight movably mounted thereon, a coiled spring connecting said rigid extensions of the two pendulums, a first adjuster means mounted on said pendulums so as to adjust the center of gravity of each pendulum by moving said weight thereof, and a second adjuster means mounted on said extensions of the pendulums so as to adjust the location of joints of said coiled spring.

4,615,023

BEAM ACCESS APPARATUS FOR OPTICAL DISC SYSTEM

Hiroshi Inada; Tadashi Nomura, and Shigeru Shimonou, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Continuation of Ser. No. 503,867, Jun. 13, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 765,172

Claims priority, application Japan, Jun. 14, 1982, 57-101912; Oct. 14, 1982, 57-180248; Oct. 14, 1982, 57-180250; Oct. 14, 1982, 57-180251; Oct. 26, 1982, 57-187704; Oct. 26, 1982, 57-187705

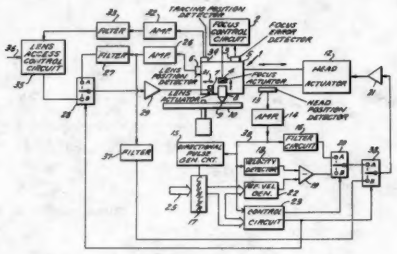
Int. Cl.[4] G11B *21/10*

U.S. Cl. 369—32 **13 Claims**

13. A beam access apparatus for an optical disc system for recording and reproducing information by means of a light beam emitted from a light source located on an optical base in a optical head and condensed into a minute light spot on a surface of a disc by an objective lens, said apparatus comprising:

(A) means for producing a lens position signal indicating a position of said objective lens in a radial direction of said disc with respect to said optical head; and

(B) means for moving said optical head and said objective lens:



(1) in a head access mode in which said optical head is moved in said radial direction and said objective lens is caused to follow the movement of said optical head such that said objective lens is located at a predetermined position with respect to said optical head; and

(2) in a lens access mode in which said objective lens is moved in said radial direction and said optical head is caused to follow the movement of said objective lens such that said optical head is located at a predetermined position with respect to said objective lens.

4,615,024

ELECTRONIC APPARATUS WITH MAGNETIC RECORDING AND REPRODUCING DEVICE

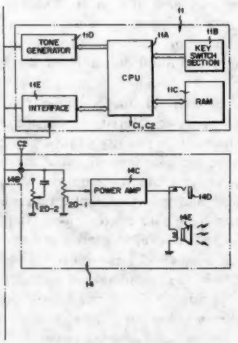
Minoru Usui, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1983, Ser. No. 475,109

Claims priority, application Japan, Mar. 19, 1982, 57-38016[U]; Aug. 27, 1982, 57-147727; Sep. 10, 1982, 57-136530[U]; Dec. 6, 1982, 57-212802; Dec. 27, 1982, 57-197030[U]

Int. Cl.[4] G11B *27/00*

U.S. Cl. 369—59 **5 Claims**



1. An electronic apparatus comprising:

a keyboard for generating plural series of tone data;

a title data input means for generating title data corresponding to each said series of tone data;

a memory means coupled to said keyboard and to said title data input means for storing said tone data and said title data;

a tone signal generating means for generating a tone signal corresponding to tone data stored in said memory means;

an accoustic converter means coupled to said tone signal generating means for converting said tone signal into sound;

means coupled to said memory means for recording and reproducing on a recording medium a plurality of sets of said tone data and said title data stored in said memory means such that each set includes a series of tone data and its corresponding title data; and

control means coupled to said title data input means, said memory means, said tone signal generating means and said recording and reproducing means, for scanning said recording medium to identify a selected title data from said recorded sets and for transmitting the series of tone data from the set to which said selected title data belongs from the recording medium to the memory means.

4,615,025

DATA TRANSMISSION SYSTEM

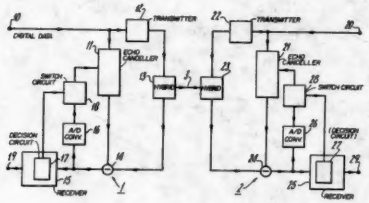
Michael G. Vry, Tetbury, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 7, 1984, Ser. No. 638,592

Claims priority, application United Kingdom, Aug. 10, 1983, 8321483

Int. Cl.[4] **H04J** *15/00;* **H04L** *5/14;* **H04B** *3/20;* **H04M** *9/08*

U.S. Cl. 370—32 **6 Claims**



1. A transmission system for digital data signals and which employs a transmission code in which one data state of such signals corresponds to a zero transmission level, comprising: an adaptive signal processing circuit which adapts to changes in the transmission characteristics of the system and updates such adaptation at fixed intervals; means for detecting the data states represented by received data signals; and means connected to said signal processing circuit and to said detecting means for inhibiting the updating of the adaptation of said signal processing circuit during intervals in which the transmission level of a received data signal does not correspond to said one data state.

4,615,026

DIGITAL FIR FILTERS WITH ENHANCED TAP WEIGHT RESOLUTION

Leonard N. Schiff, Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 20, 1984, Ser. No. 572,442

Int. Cl.[4] **G06F** *15/31*

U.S. Cl. 364—724 **6 Claims**

1. A finite impulse response filter comprising:

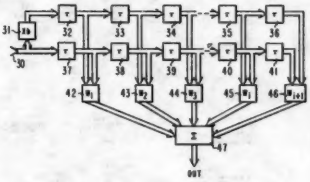
a source of digital input signal samples;

a first tapped delay line having an input port coupled to said source and a plurality of output ports at which successively delayed signal samples are available;

a signal scaling circuit having an input port coupled to said source and having an output port;

a second tapped delay line having an input port coupled to said scaling circuit and having a plurality of output ports at which successively delayed scaled signal samples are available;

a plurality of weighting circuits respectively coupled to said output ports, for producing representations of said input signal samples weighted by respective coefficient values,



at least one of said weighting circuits being coupled to receive both scaled and non-scaled samples equally delayed from signal samples at said source, said at least one weighting circuit utilizing both said scaled and non-scaled samples to produce a weighted sample; and

means for summing weighted samples from said plurality of weighting circuits including said at least one of said weighting circuits for producing filtered samples representative of said input signal samples.

4,615,027

MULTIPROCESSOR-TYPE FAST FOURIER-ANALYZER

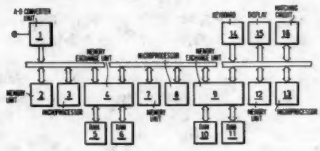
Gábor Rajkai; Rozália Szabó; István Dohár, all of Budapest; Sándor Vinkovits, Budaörs; Márta Hetei, and György Flórián, both of Budapest, all of Hungary, assignors to Elektroakusztikai Gyár, Budapest, Hungary

Filed Mar. 7, 1983, Ser. No. 473,166

Claims priority, application Hungary, Mar. 31, 1982, 983/82

Int. Cl.[4] **G06F** *7/34, 15/35*

U.S. Cl. 364—726 **1 Claim**

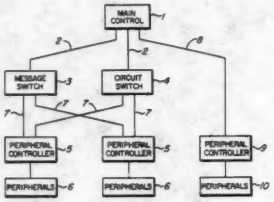


1. A multiprocessor type fast Fourier analyzer comprising: three independent processors each having a single independent bus for address, data and control, a microprocessor connected to the independent bus and a memory connected to the independent bus; and means for establishing bidirectional data flow between each two adjacent independent buses comprising two separate random access memories and a processor controlled memory exchange unit connected to the two adjacent independent buses and to the separate random access memories for connecting the two adjacent independent buses alternately to the two separate random access memories, and wherein a first independent bus of a first processor is provided for realizing data acquisition and is connected to an analog to digital converter unit, wherein a first memory exchange unit is connected to the first bus and a second independent bus of a second processor, said second processor performing a FFT analysis, wherein a second memory exchange unit is connected to said second bus and to a third independent bus of the third processor for I/O control, with said third bus connected to a display, an I/O device and to a keyboard for programming and controlling the analyzer.

4,615,028
SWITCHING SYSTEM WITH SEPARATE SUPERVISORY LINKS

Conrad Lewis, Nepean, and Gino Totti, Kanata, both of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Feb. 6, 1984, Ser. No. 577,500
Claims priority, application Canada, Feb. 18, 1983, 421936
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—58 **21 Claims**

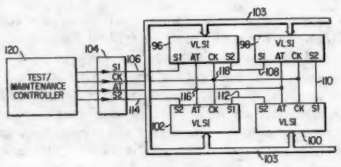


1. A switching system comprising:
(a) a main system control means,
(b) a plurality of peripheral units, including peripheral unit control circuit means associated therewith and ports for connection of peripherals thereto,
(c) a circuit switching network under control of the main control system connected via links to said peripheral units for carrying and switching transmission paths for signals transmitted between the peripheral units via said ports, and
(d) a message switching network separate from the circuit switching network connected between the peripheral unit control circuit means and the main system control for carrying and switching supervisory and control signals related to the status of the peripherals between said peripheral unit control circuit means and the main system control means.

4,615,029
RING TRANSMISSION NETWORK FOR INTERFACING CONTROL FUNCTIONS BETWEEN MASTER AND SLAVE DEVICES

Kwok D. Hu, and Robert W. Bloemer, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 3, 1984, Ser. No. 677,153
Int. Cl.[4] H04J *3/24*
U.S. Cl. 370—89 **18 Claims**

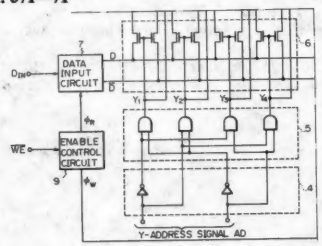


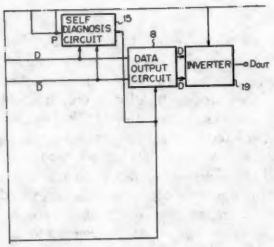
1. A communication network, comprising:
a common transmission line having two ends and configured as a ring;
a master control unit for being connected to both ends of said ring and having means associated therewith for originating transmission from either end of said ring and receiving transmissions from either end thereof; and
a plurality of slave devices disposed about said ring at predetermined relative positions and in series with said transmission line, each of said slave devices having:
means for determining the direction of transmission on said ring;
means for delaying said transmission therethrough for a predetermined delay time;
means for detecting a unique identifier in said transmission, said unique identifier generated by said master control unit and corresponding to the relative position of the receiving one of said slave devices on said ring relative to the end of said transmission line where said transmissions are originated, and
means for inhibiting transmission of received data and terminating said ring when said unique identifier corresponds to the receiving one of said slave devices such that a communication link is established between the selected one of said slave devices and said master control unit, the selected one of said slave devices maintaining a termination on said ring until another unique identifier is transmitted from said master control unit.

4,615,030
SEMICONDUCTOR MEMORY DEVICE WITH SELF CORRECTION CIRCUIT

Yutaka Kumagai, Tokyo, Japan, assignor to OKI Electric Industry Co. Ltd., Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,281
Claims priority, application Japan, Apr. 4, 1983, 58-58023
Int. Cl.[4] G06F *11/00*; G11C *29/00*
U.S. Cl. 371—71 **6 Claims**





1. A semiconductor memory device comprising:
a memory array having word and bit lines arranged as a matrix and a plurality of memory cells connected between said bit and word lines;
a data line;
a switching circuit for selectively connecting said data line with the bit lines of the memory array;
a data input circuit coupled to the data line for delivering information to the data line; and
a data output circuit coupled to the data line to read out information from a selected memory cell in the memory array to an output terminal through the data line; wherein the improvement comprises;

a self-diagnosis circuit coupled to the data line for storing during a writing period the information on said data line which is also stored in a selected memory cell of said memory array and for then comparing the information stored in said self-diagnosis circuit with that from said selected memory cell, said self-diagnosis circuit delivering an error signal when the two pieces of information are different from each other;

a first register circuit coupled to said bit lines of said memory array for storing, in response to said error signal, an indication of the particular bit line of the memory cell which resulted in said error signal, and for subsequently delivering a first register output signal upon the reading of a memory cell on said particular bit line;

a second register circuit coupled to said word lines of said memory array for storing, in response to said error signal, an indication of the particular word line of the memory cell which resulted in said error signal, and for subsequently delivering a second register output signal upon the reading of a memory cell on said particular word line;

a logic circuit for producing a control signal upon receipt of both the first and second register output signals; and

an output inverter circuit for inverting information fed from said data output circuit to said output terminal in response to said control signal from said logic circuit.

4,615,031
INJECTION LASER PACKAGES

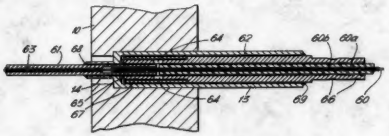
Brian A. Eales, Stansted; Terry Bricheno, Great Sampford; Norman D. Leggett, Hoddesdon, and John E. U. Ashton, Galmpton, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,066

Claims priority, application United Kingdom, Jul. 27, 1982, 8221649

Int. Cl.⁴ H01S *3/045*

U.S. Cl. 372—36 **10 Claims**



1. A hermetically sealed injection laser package comprising:

a metal housing including a wall with an aperture therethrough;

a metal heat sink secured inside said package housing on which the injection laser is mounted;

a feed-through tube mounted in said aperture and having one end portion which extends outside of said housing and a second end portion which extends inside of said housing;

a metal support tube having one end secured in said second end portion of said feed through tube and a second end which extends adjacent the injection laser;

an optical fiber extending through said support tube and said feed through tube and being hermetically sealed to said support tube with a hermetic glass-to-metal joint; and

anchor means secured to said tube and to said heat sink by welding to provide coupling of the laser output with said optical fiber.

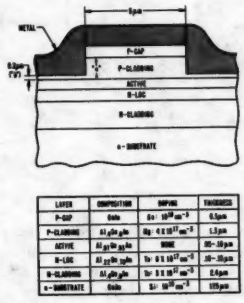
4,615,032
SELF-ALIGNED RIB-WAVEGUIDE HIGH POWER LASER

Walter R. Holbrook, Exeter Township, Berks County; Claude L. Reynolds, Jr., Wyomissing; Julie A. Shimer, Bethlehem, all of Pa., and Henryk Temkin, Berkeley Heights, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 13, 1984, Ser. No. 630,691

Int. Cl.⁴ H01L *3/19*

U.S. Cl. 372—45 **15 Claims**



1. Device comprising

a semiconductor cladding layer,

a large optical cavity (LOC) layer on the cladding layer,

an active layer on the LOC layer,

a cladding layer on said active layer,

said active layer forming with one of said cladding layers a p-n junction capable when biased electrically of generating light in the active layer and emitting said light into the LOC layer,

at least one of said cladding layers having a rib portion, said rib portion being thicker than the remainder of the cladding layer,

an ohmic contact layer covering the top of the rib, and

a barrier layer covering the sidewalls of the rib and the remainder of the cladding layer and responsive to an external electrical signal source, said barrier layer, when biased by said external signal source, capable of creating a refractive index difference Δn greater than 10^{-3} in the cladding layer at the edge of said rib.

4,615,033
ARGON GAS LASER DEVICE

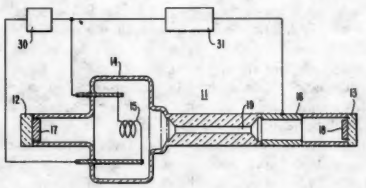
Hirotaka Nakano, Yokohama, and Tatumi Goto, Yamato, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jun. 8, 1982, Ser. No. 386,351

Claims priority, application Japan, Jun. 8, 1981, 56-86903

Int. Cl.⁴ H01S *3/08*

U.S. Cl. 372—99 **6 Claims**



1. An argon gas laser for emitting monochromatic light at 4880 Å at relatively high output power utilizing a relatively high discharge current of more than 5 amps comprising:

an elongated envelope containing argon gas, an optical resonator having a high reflectance multilayer mirror and an output coupling multilayer facing each other and disposed along the optical axis of said envelope, and a cathode electrode and an anode electrode disposed within said envelope for discharging through said gas;

said high reflectance multilayer mirror having between 20 and 26 alternately stacked layers of relatively high refractive index material and relatively low refractive index material, said high reflectance mirror having a high reflectance band with a bandwidth $2\Delta g$ and a center wavelength λ_0, said center wavelength having a value less than 4880 Å such that the difference between λ_0 and 4880 Å is an amount between 18.75% and 37.5% of the bandwidth of said high reflectance band, each of said alternately stacked layers having a thickness of $\lambda_0/4$, said high reflectance band of said high relfectance mirror having a tail portion containing high gain wavelengths longer than 4880 Å so that said high reflectance mirror has a higher transmittance of said longer high gain wavelengths positioned in said high reflectance band than the transmittance of said high reflectance mirror for light at 4880 Å;

said output coupling multilayer mirror having between 6 and 14 alternately stacked layers of relatively high refractive index material and relatively low refractive index material, said output coupling mirror having a high reflectance zone with a center wavelength longer than 4880 Å and a transmittance of approximately 3% to 6% at 4880 Å.

4,615,034

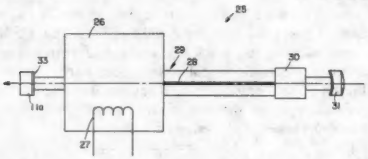
ULTRA-NARROW BANDWIDTH OPTICAL THIN FILM INTERFERENCE COATINGS FOR SINGLE WAVELENGTH LASERS

Marc K. von Gunten; Benjamin H. Cook, both of San Jose, and David C. Gerstenberger, Mountain View, all of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 30, 1984, Ser. No. 595,296

Int. Cl.[4] H01S *3/08*

U.S. Cl. 372—99 **15 Claims**



1. A laser of the kind which can oscillate on more than one wavelength simultaneously, said laser comprising,

a single resonant optical cavity,

an optical gain medium,

at least two reflective mirrors delimiting the optical cavity, and

coating means on at least one mirror surface for providing operation of said laser at any selected single or band of wavelengths, including any weak or low gain wavelengths, independent of their optical gains and at substantially any current or power level while suppressing non-selected wavelengths such that, said coating adjusts thresholds of all selected and non-selected wavelengths, including any dominant or high gain wavelengths, said coating having a coating reflectance to support laser oscillation for said selected single or band of wavelengths such that said selected single wavelength or band of wavelengths are above threshold, said coating further having a coating reflectance to suppress laser oscillation at said non-selected wavelengths, including dominant or high gain wavelengths, such that said non-selected wavelengths are below threshold.

4,615,035

BOTTOM ELECTRODE ARRANGEMENT FOR AN ELECTRIC FURNACE

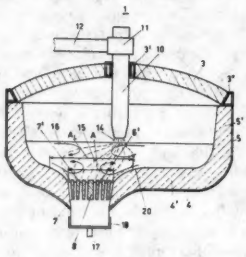
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jan. 24, 1985, Ser. No. 694,313

Claims priority, application Switzerland, Jan. 31, 1984, 444/84

Int. Cl.[4] H05B *7/02*

U.S. Cl. 373—72 **11 Claims**



1. A direct current electric arc furnace for melting metals, comprising:

a furnace crucible having a base including a hearth surface;

a top electrode;

a bottom electrode having a top surface extending into said crucible through said hearth surface; and

means for forming an arc between said top and bottom electrodes,

wherein said top surface of said bottom electrode comprises at least one metallic component and at least one non-metallic component, whereby the erosion of said metallic component by a flow of said molten metal is retarded, and wherein:

$$1.2(L/R) \leqq (AL/A) \leqq 10(L/R)$$

where A is the cross-section area in m^2 of the bottom electrode at said top surface,

AL is the cross-section area of said hearth surface in m^2,

L is the axial distance in m from said top surface, and

R is the radius in m of said bottom electrode at said top surface.

4,615,036

COOLING THE ELECTRODE CONNECTION IN AN ARC FURNACE

Luciano Ambrosi, Moers; Klaus von Ploetz, Kaarst; Ludger Zangs, Essen, and Friedrich Nordmeyer, Mettmann, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,423

Claims priority, application Fed. Rep. of Germany, May 26, 1983, 3319389

Int. Cl.[4] H05B *7/08*

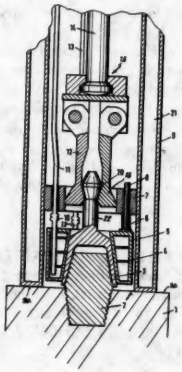
U.S. Cl. 373—93 **3 Claims**

1. In a connection device between an upper hollow metallic electrode section and a lower electrode section, there being a connecting nipple form fittingly connected to the lower electrode section and being form fittingly connected to a tensioned receiver for urging the lower electrode section against the upper electrode section, a cooling structure comprising:

a twin wall sleeve with a conical inner wall and having an integral cooling space between the inner wall and an outer wall and being arranged around said receiver for receiving said receiver, there being means for feeding cooling fluid to and extracting coolant fluid from the internal

cooling space of said conical sleeve so as to obtain cooling of the nipple through the receiver; and

means holding said twin wall sleeve within said upper electrode section permitting limited axial displacement therein



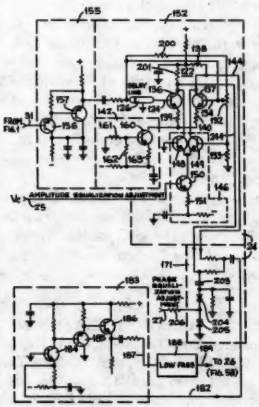
as well as in relation to said receiver it receives, said sleeve as receiving said receiver and indirectly said nipple, having axial dimensions so as to cover most of the portions of the nipple which project axially from the lower electrode section.

4,615,037

PHASE SCATTER DETECTION AND REDUCTION CIRCUIT AND METHOD

Alan J. Adler, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 29, 1985, Ser. No. 695,995
Int. Cl.[4] H03H *7/40*
U.S. Cl. 375—12 **16 Claims**



1. Apparatus for detecting phase scatter in a digital signal transmitted over a channel, said channel having a non-constant amplitude response and/or non-linear phase response, comprising:

an equalization circuit having an input coupled to receive said transmitted signal and an output, said equalization circuit being coupled to provide an equalized signal and having a response which compensates for said channel response;

a phase locked loop coupled to provide a reference signal synchronous with said equalized signal, said phase locked loop comprising a reference clock signal generator means having an output coupled to provide a reference clock signal, and a phase detector means having a first input coupled to receive said reference clock signal and a second input coupled to receive said equalized signal, said phase detector means having an output providing a bistable output signal corresponding to a phase difference between said signals at said first and second input thereof, said output of the phase detector means being coupled to a control input of said signal generator means to control the frequency of said reference clock signal provided thereby; and

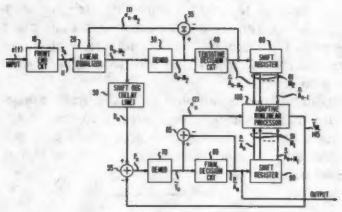
frequency detector means coupled to said output of said phase detector means for monitoring a rate of transitions of said bistable output signal.

4,615,038

EQUALIZATION OF MODULATED DATA SIGNALS UTILIZING TENTATIVE AND FINAL DECISIONS AND REPLICATION OF NON-LINEAR CHANNEL DISTORTION

Tong L. Lim, deceased, late of Middletown; by Keung-Yi P. Yu, executor, Westfield, and Richard D. Gitlin, Little Silver, all of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jun. 6, 1984, Ser. No. 617,979
Int. Cl.[4] H04B *3/04*
U.S. Cl. 375—14 **15 Claims**



10. A method of processing received samples of a modulated data signal representing a stream of data symbols, comprising the steps of

forming responsive to said received samples a first set of decisions as to the value of said data symbols,

forming a replica of non-linear distortion in said data signal in response to a weighted sum of the products of the values of decisions in said first set, and

forming, responsive to signals including said replica, final decisions as to the values of said data symbols.

4,615,039

DATA NETWORK DRIVER

Gabriel M. Y. Li, San Francisco; Charles P. Carinalli, Sunnyvale, and Ramanatha V. Balakrishnan, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 1, 1984, Ser. No. 655,809
Int. Cl.[4] H04B *3/00*; H03K *17/56*
U.S. Cl. 375—36 **8 Claims**

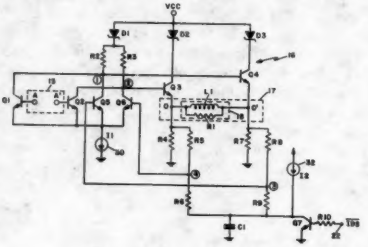
1. A data network driver for producing output data signals corresponding to input differential data signals from a transmission controller and provided on a differentially-conducting medium, comprising:

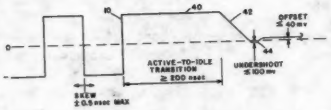
input means responsive to an input differential data signal for

providing a transmission driving signal representative of said differential data signal;

idle means coupled to said input means for selectively disabling said input means from providing said transmission driving signal and for, when said input means is disabled, providing an idle signal having adjustable characteristics;

output means having an output port connected to said medium and responsive to said transmission driving signal for providing an output data signal through said output port





in response to said transmission driving signal and for providing, through said port and in response to said idle signal, a quiescent signal having a transition interval determined by said idle signal followed by a substantially zero signal level; and

adjustment means coupled to said output port and to said idle means for measuring the differential level of said quiescent signal and for, based upon said measurement, adjusting the characteristics of said idle signal to reduce said differential level.

4,615,040

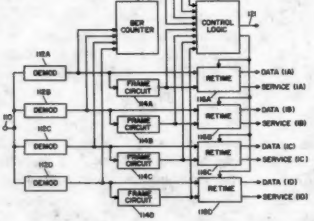
HIGH SPEED DATA COMMUNICATIONS SYSTEM

Luigi F. Mojoli, Vimercate, and Angelo F. Olivieri, Dovera, both of Italy, assignors to Coenco Ltd., Great Britain

Filed Jun. 14, 1984, Ser. No. 620,580

Int. Cl.[4] H04B *7/02*

U.S. Cl. 375—40 **35 Claims**



13. A system for transmission and reception of a serial stream of digital data from a first location to a second location, comprising:

means at said first location, responsive to said serial data stream, for forming a plurality of N parallel data substreams, each of said substreams comprising a series of data frames, each of said data frames including a data frame timing signal and a predetermined quantity of digital data;

N modulators at said first location, each for modulating a component signal with one of said N data substreams;

means for transmitting said modulated component signals to said second location;

N demodulators at said second location for demodulating said modulated component signals to derive therefrom said N parallel data substreams;

means responsive to said frame timing signals in said demodulated data substreams for retiming said digital data in said substreams; and

means responsive to said retimed substream digital data for generating an output serial stream of digital data.

4,615,041

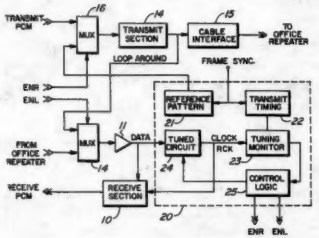
ADAPTIVELY TUNED CLOCK RECOVERY CIRCUIT

Leslie M. Koskinen, Aylmer, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 23, 1984, Ser. No. 633,612

Int. Cl.[4] H04L *7/02*

U.S. Cl. 375—114 **14 Claims**



1. An adaptively tuned clock recovery circuit for recovering a clock signal from an incoming digital data stream comprising:

a pattern generator for supplying a periodic reference data pattern at a local clock rate;

a tunable resonant circuit having an initial resonant frequency in the vicinity of the local clock rate and excited by said reference data pattern, said tunable resonant circuit comprising an array of capacitors C_1–C_j–C_n, where $C_{(j+1)}=2C_j$ and C_1 has a predetermined value;

a bistable phase discriminator for indicating that a predetermined phase-difference between said local clock rate and free oscillations of said tunable resonant circuit has been exceeded; and

control means responsive to said bistable phase discriminator for varying said initial resonant frequency toward said local clock rate until said predetermined phase-difference is no longer being exceeded.

4,615,042

DISPLACEABLE X-RAY EXAMINATION TABLE

Walter Schmedemann, Tangstedt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1983, Ser. No. 554,139

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244578

Int. Cl.[4] A61B *6/04;* **A61G** *13/00*

U.S. Cl. 378—209 **3 Claims**

1. An X-ray examination table having a displaceable table top, said examination table comprising:

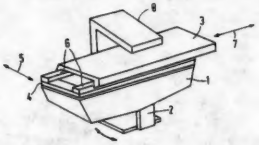
a self-braking motor;

a drive sprocket drivable by the motor;

an endless chain engaged by the drive sprocket, said chain

movable along an endless curved path around the sprocket; and

a rigid guide having a duct therein, the chain being arranged



in the duct in the guide, said guide having a slot therein through which the chain is coupled to the table top, said duct having dimensions such that the chain cannot move substantially transverse to the endless curved path.

4,615,043

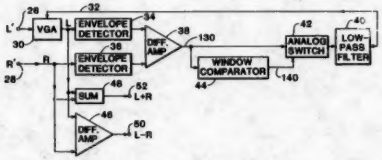
TRIPHONIC SOUND SYSTEM

Don Latshaw, 66275 Barr Rd., Bend, Oreg. 97701

Filed Dec. 24, 1984, Ser. No. 685,295

Int. Cl.[4] H04R *5/00*

U.S. Cl. 381—27 **19 Claims**



1. In a stereo system wherein, provided the listener remains equidistant from a left speaker and a right speaker, the common components of the left and right signals produce in the listener's mind a virtual sound source that appears to be located between the left and right speakers, the method comprising:

providing center speaker means located between the left speaker and the right speaker; and,

applying to the center speaker means a linear combination of the left and right signals modulated by the square root of a commonality index, said commonality index representing the percentage of the total output power that is contained in the common components, whereby the virtual sound source is replaced by the center speaker means making it unnecessary for the listener to remain equidistant from the left speaker and the right speaker.

4,615,044

INTERFACE BETWEEN VIDEO CASSETTE PLAYER AND TELEVISION RECEIVER

William D. Killion, 2232 Lindsay Michelle Dr., Alpine, Calif. 92001

Filed Sep. 29, 1983, Ser. No. 536,865

Int. Cl.[4] H03G *3/00*

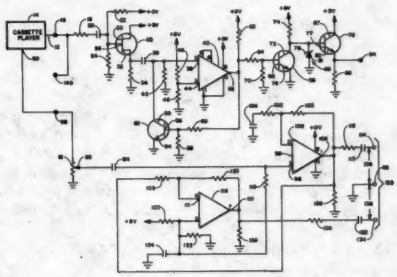
U.S. Cl. 381—109 **3 Claims**

1. An electronic high to low impedance interface circuit having a high impedance audio input and a low impedance audio output circuit comprising:

a gain level control means (92) with an input connected to a source of high impedance of at least 20,000 ohms audio;

a non-inverting amplifing means (98) having an output (114) and a positive input (96) and negative input operatively connected to ground potential, said positive input (96) connected to the output of said gain level control means (92); and

a unity gain inverting amplifing means (116) having an output (134) and a positive and a negative input, said positive input operatively connected to said gain level control means and said negative input connected to the output of said non-inverting amplifing means, whereby the impe-



dance between the outputs (114) and (134) is six hundred ohms and the impedance between either output (114) or (134) and ground potential (115) is one hundred fifty ohms.

4,615,045

PILFER PROOF HANGUP BAG STRUCTURE AND METHOD

Karl-Heinz Siegel, Nuremberg, Fed. Rep. of Germany, assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Nov. 1, 1984, Ser. No. 667,101

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339653

Int. Cl.[4] B65D *33/34*

U.S. Cl. 383—5 **18 Claims**

1. A pilfer proof hangup bag structure, comprising:

bag top separable closure means including confronting fastener strips for extending lengthwise across the bag top and having inside faces wherein a first extruded plastic profile extends along one of said faces and is separably engageable with a complementary second extruded plastic profile extending along the other of said faces;

a first pull flange coextensive in length with said strips and extending upwardly a limited distance from said first profile to a top end on the first pull flange;

a second pull flange coextensive in length with said strips,

and extending upwardly from said second profile to a top end of said second pull flange at a height about the same as said first pull flange top end;

a header extension projecting to a substantial distance upwardly from a lower end attached to said second pull flange top end and having hangup means on its upper portion;

and a rupturable bag top closing pilfer proof tongue consisting of a folded web parallel to and spaced from said header extension having, when folded, opposite parallel walls having respective edges with one edge attached to and along said top end of said first pull flange and a second edge of said tongue attached to and along the top end of said second pull flange and at the lower end of said header, said walls having means for facilitating rupture along fracture lines adjacent to said edges above said first and second pull flanges for preventing access past said pull flanges and said separable fastener means into the associated bag top until said tongue is ruptured.

15. A method of making a pilfer proof hangup bag structure, comprising:

forming bag top separable closure means including complementary fastener strips for extending lengthwise across the bag top and having inside faces and equipping said inside faces with extruded plastic profiles wherein one of the profiles extends along one of said faces and is separably engageable with a complementary second extruded plastic profile extending along the other of said faces;

providing a first pull flange coextensive in length with said strips and extending upwardly a limited distance from said first profile to a top end of the first pull flange;

providing a second pull flange coextensive in length with said strips, and extending upwardly from said second profile to top end at a height about the same height as said first pull flange top end;

providing on said second pull flange an extension forming a header having on its upper end portion hangup means;

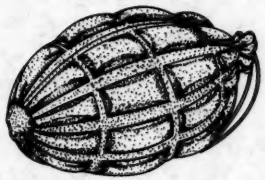
providing a rupturable bag top closing pilfer proof folded tongue having opposite parallel walls with respective edges and attaching on of said edges to and along the top end of said first pull flange and attaching the remaining edge of said tongue to the top of said second pull flange from which said header extends upwardly from said second pull flange so that said tongue is spaced from and parallel to said extension; and

providing means for rupturing said walls along respective lines adjacent said edges and above said pull flanges for thereby preventing access past said pull flanges and said separable fastener means until said tongue is ruptured.

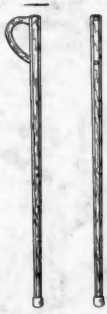
DESIGNS

SEPTEMBER 30, 1986

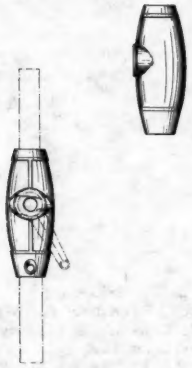
285,860
SAUSAGE
Hans F. Müller, 2459 Southwell, Dallas, Tex. 75229
Filed Apr. 11, 1984, Ser. No. 598,995
Term of patent 14 years
U.S. Cl. D1—106



285,861
WALKING STAFF
Rachel C. Jackson, Rte. 4, Box 424-A, Canyon Lake, Tex. 78130
Filed Jun. 10, 1985, Ser. No. 743,033
Term of patent 14 years
U.S. Cl. D3—7



285,862
UMBRELLA GEAR HOUSING
Edward D. Levy, Fort Lee, N.J., assignor to Finkel Outdoor Products, Inc., New York, N.Y.
Filed Jan. 16, 1984, Ser. No. 570,895
Term of patent 14 years
U.S. Cl. D3—10



285,863
LUGGAGE CASE
Michael Davis, and William H. Wilhoit, both of New Castle, Pa., assignors to Airway Industries, Inc., Ellwood City, Pa.
Filed Apr. 26, 1984, Ser. No. 604,216
Term of patent 14 years
U.S. Cl. D3—48

285,864
KEY HOLDER
Kazumi Sakai, Tokyo, Japan, assignor to Car Mate Mfg. Co. Ltd., Tokyo, Japan
Filed Nov. 8, 1983, Ser. No. 550,009
Term of patent 14 years
U.S. Cl. D3—61

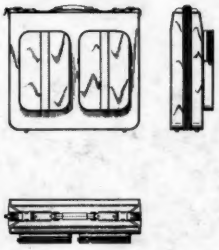
285,865
COMBINED POCKET TOOL CASE AND KEY HOLDER
William L. Gamble, Unionville, Conn., assignor to The W. E. Bassett Company, Derby, Conn.
Filed Mar. 22, 1984, Ser. No. 592,430
Term of patent 14 years
U.S. Cl. D3—64

285,866
COMBINED POCKET TOOL CASE AND KEY HOLDER
William L. Gamble, Unionville, Conn., assignor to The W. E. Bassett Company, Derby, Conn.
Filed Mar. 22, 1984, Ser. No. 592,432
Term of patent 14 years
U.S. Cl. D3—64

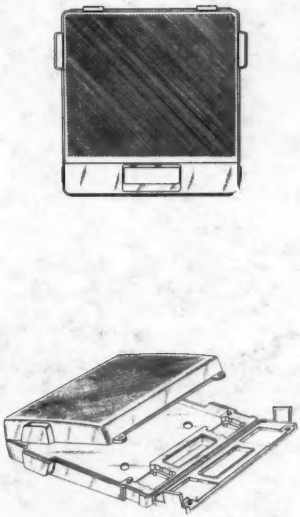
285,867
KEY RING
Joseph A. Holland, 1424 Rio Grande, Albuquerque, N. Mex. 87104
Filed Oct. 3, 1983, Ser. No. 538,482
Term of patent 14 years
U.S. Cl. D3—65

285,868
LUGGAGE CASE
Michael Davis, and William H. Wilhoit, both of New Castle, Pa., assignors to Airway Industries, Inc., Ellwood City, Pa.
Filed Apr. 26, 1984, Ser. No. 604,218
Term of patent 14 years
U.S. Cl. D3—71

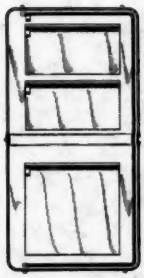
285,869
GARMENT BAG
Amir Ronen, 1818 Barry Ave., #107, W. Los Angeles, Calif. 90025
Filed Feb. 27, 1984, Ser. No. 584,248
Term of patent 14 years
U.S. Cl. D3—71

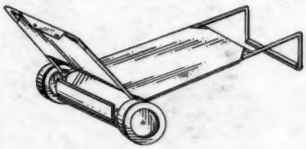


285,870
TYPEWRITER CASE
Tamao Ikuta, Yokohama, and Seiichi Omino, Hoya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 26, 1984, Ser. No. 603,930
Claims priority, application Japan, Nov. 1, 1983, 58-47428
Term of patent 14 years
U.S. Cl. D3—73



285,871
CONVERTIBLE STORAGE CART AND LOUNGE SEAT FOR USE PRIMARILY ON A BEACH
Lauri A. Stenwall, 28 White Ter., Ramsey, N.J. 07446
Filed Jan. 11, 1984, Ser. No. 569,899
Term of patent 14 years
U.S. Cl. D6—336





285,872
TRIPOD STOOL
Henry Massonnet, 01760 Nurieux-Volognat, France
Filed Mar. 30, 1984, Ser. No. 595,209
Claims priority, application France, Oct. 19, 1983, 83 3795
Term of patent 14 years
U.S. Cl. D6—352

285,873
CHAISE
Eugene A. Criqui, Covina, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Apr. 14, 1983, Ser. No. 484,787
Term of patent 14 years
U.S. Cl. D6—361

285,874
CHAIR
James A. McCaffrey, 1220 St. Lawrence Dr., Alpharetta, Ga. 30201
Filed Apr. 19, 1984, Ser. No. 602,203
Term of patent 14 years
U.S. Cl. D6—365

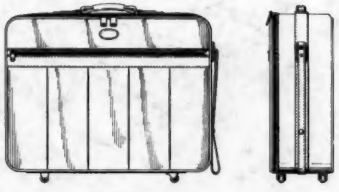
285,875
ADJUSTABLE ARMCHAIR
Paul R. Goldman, Andover, Mass., assignor to Plycraft Inc., Lawrence, Mass.
Filed Sep. 24, 1984, Ser. No. 653,345
Term of patent 14 years
U.S. Cl. D6—367

285,876
ADJUSTABLE ARMCHAIR
Paul R. Goldman, Andover, Mass., assignor to Plycraft Inc., Lawrence, Mass.
Filed Sep. 24, 1984, Ser. No. 653,347
Term of patent 14 years
U.S. Cl. D6—367

285,877
ADJUSTABLE ARMCHAIR
Paul R. Goldman, Andover, Mass., assignor to Plycraft Inc., Lawrence, Mass.
Filed Sep. 24, 1984, Ser. No. 653,348
Term of patent 14 years
U.S. Cl. D6—373

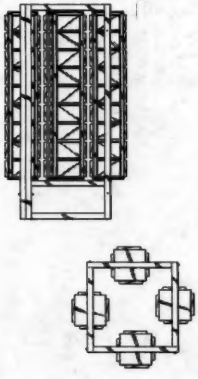
285,878
ADJUSTABLE ARMCHAIR
Paul R. Goldman, Andover, Mass., assignor to Plycraft Inc., Lawrence, Mass.
Filed Sep. 24, 1984, Ser. No. 653,349
Term of patent 14 years
U.S. Cl. D6—367

285,879
SUITCASE
Sheldon Fuchs, 197 N. Parkview Dr., Agoura, Calif. 91301
Filed Feb. 27, 1984, Ser. No. 584,247
Term of patent 14 years
U.S. Cl. D3—71



285,880
BED TENT
Harrell Griesenbeck, P.O. Box 665, Ennis, Tex. 75119
Filed May 20, 1983, Ser. No. 496,585
Term of patent 14 years
U.S. Cl. D6—383

285,881
CASSETTE DISPLAY RACK
Gregory G. Mt. Pleasant, Baldwinsville, and James R. Dokoupil, Liverpool, both of N.Y., assignors to Gaylord Bros., Inc., Liverpool, N.Y.
Filed Sep. 30, 1983, Ser. No. 537,569
Term of patent 14 years
U.S. Cl. D6—461



285,882

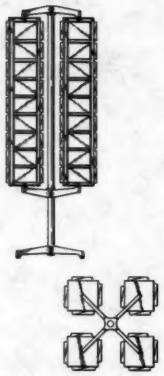
CASSETTE DISPLAY RACK

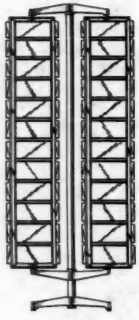
Gregory G. Mt. Pleasant, Baldwinsville, and James R. Dokoupil, Liverpool, both of N.Y., assignors to Gaylord Bros., Inc., Liverpool, N.Y.

Division of Ser. No. 537,569, Sep. 30, 1983. This application Apr. 10, 1985, Ser. No. 721,762

Term of patent 14 years

U.S. Cl. D6—461





285,883

UMBRELLA BASE

Joseph F. Tegze, Totowa, N.J., assignor to Finkel Outdoor Products, Inc., New York, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,399

Term of patent 14 years

U.S. Cl. D6—495

285,884

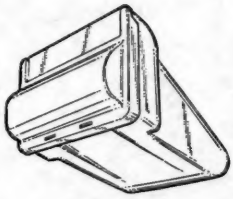
STORAGE COMPARTMENT FOR A BABY CARRIER SEAT

Robert D. Wise, Akron, and Robert L. Quinlan, Barberton, both of Ohio, assignors to Gerber Products Company, Fremont, Mich.

Filed Jan. 22, 1985, Ser. No. 693,502

Term of patent 14 years

U.S. Cl. D6—509



285,885

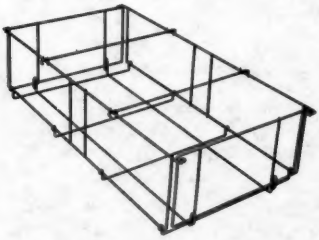
RACK TO SUPPORT GROCERY BAGS OR THE LIKE

Anthony P. Cusenza, 4956 Park Dr., Carlsbad, Calif. 92008, and William J. Riddell, 114 Woodland Dr., Vista, Calif. 92083

Filed Jun. 18, 1984, Ser. No. 622,006

Term of patent 14 years

U.S. Cl. D6—512

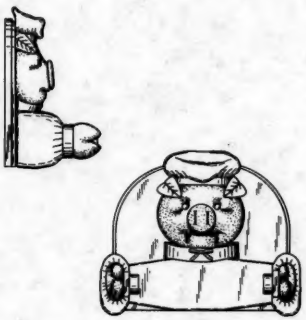


285,886

PAPER TOWEL HOLDER

Marvel M. LaRue, MPO. 63L Riverside Dr., and Dawn M. Likness, MPO. 70L Riverside Dr., both of Washougal, Wash. 98671

Filed Nov. 30, 1984, Ser. No. 676,567
Term of patent 14 years
U.S. Cl. D6—522

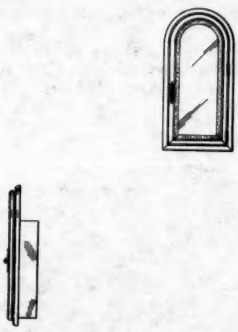


285,887

MEDICINE CABINET

James J. Palka, 22351 W. Thorndale Dr., Kildeer, Ill. 60047

Filed Apr. 2, 1984, Ser. No. 595,971
Term of patent 14 years
U.S. Cl. D6—559

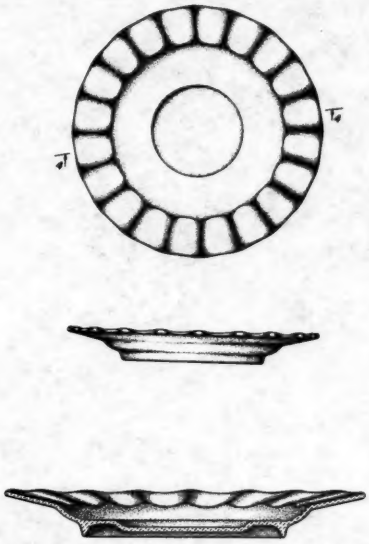


285,888

SAUCER

Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial, Incorporated, Secaucus, N.J.

Filed May 26, 1983, Ser. No. 498,634
Term of patent 14 years
U.S. Cl. D7—30



285,889

SPOON

Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.

Filed Sep. 15, 1982, Ser. No. 418,475
The portion of the term of this patent subsequent to Apr. 29, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—137

285,890

ESPRESSO COFFEE MAKER

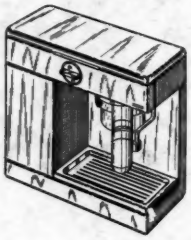
Alister Jack, Grijpskerk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1984, Ser. No. 613,929

Claims priority, application Netherlands, Dec. 2, 1983, 58472-00

Term of patent 14 years

U.S. Cl. D7—309



285,892

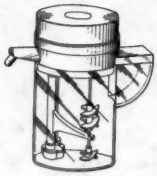
MIXER-POURER FOR DRINKS

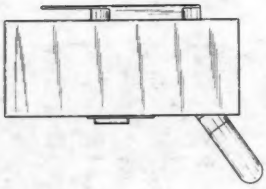
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

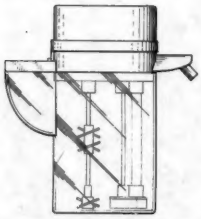
Filed May 4, 1984, Ser. No. 606,901

Term of patent 14 years

U.S. Cl. D7—376







285,891

MICROWAVE OVEN

Takao Miyake, and Masayoshi Kawaichi, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan

Filed Mar. 7, 1983, Ser. No. 473,024

Claims priority, application Japan, Oct. 8, 1982, 57-46022

The portion of the term of this patent subsequent to Mar. 1, 1997, has been disclaimed.

Term of patent 14 years

U.S. Cl. D7—351

285,893

FRONT PANEL FOR A MICROWAVE OVEN

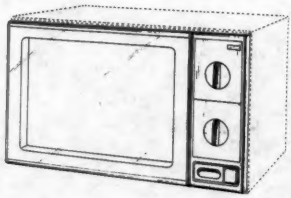
Kensuke Mizuma; Masuo Ichihara, and Toshio Harada, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Osaka, Japan

Filed Jun. 10, 1983, Ser. No. 503,109

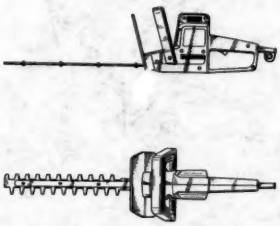
Claims priority, application Japan, Dec. 28, 1982, 57-58727

Term of patent 14 years

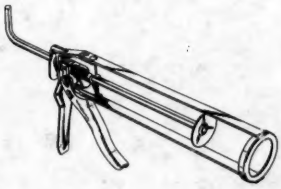
U.S. Cl. D7—405



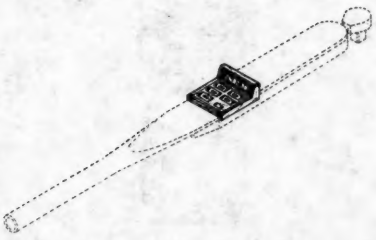
285,894
HEDGE TRIMMER
Hideki Kawakami, Hiroshima, and Yutaka Kanamaru, Tokyo, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed May 7, 1984, Ser. No. 608,044
Claims priority, application Japan, Nov. 28, 1983, 58-51715
Term of patent 14 years
U.S. Cl. D8—8



285,895
MASTIC GUN
John P. A. Cox, Newbury, England, assignor to P.C. Cox (Newbury) Limited, England
Filed Nov. 25, 1983, Ser. No. 554,953
Claims priority, application United Kingdom, May 25, 1983, 1013241
Term of patent 14 years
U.S. Cl. D8—14.1

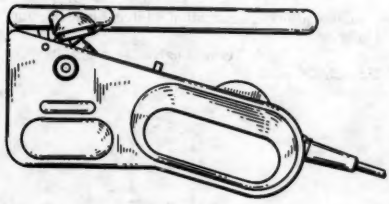


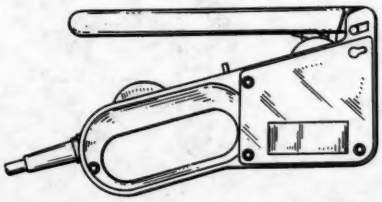
285,896
FORCE READOUT UNIT FOR TORQUE WRENCHES
Bosko Grabovac, Arcadia, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.
Filed Jan. 20, 1983, Ser. No. 449,475
Term of patent 14 years
U.S. Cl. D8—24



285,897
AEROSOL TORCH
George B. Giles, Scarborough, and Donald B. Ross, Markham, both of Canada, assignors to Giles Tool Agencies Limited, Scarborough, Canada
Filed May 2, 1984, Ser. No. 606,127
Claims priority, application Canada, Feb. 10, 1984, 10-02-84-6
Term of patent 14 years
U.S. Cl. D8—30

285,898
ELECTRIC HAND-HELD CAN OPENER
Davin Stowell; Tucker Viemeister, both of New York, and John Lonczak, Scarsdale, all of N.Y., assignors to Sanyei Corporation, Japan
Filed Jan. 30, 1984, Ser. No. 574,924
Term of patent 14 years
U.S. Cl. D8—36





285,899

TEMPLET FOR FILING A SAW CHAIN

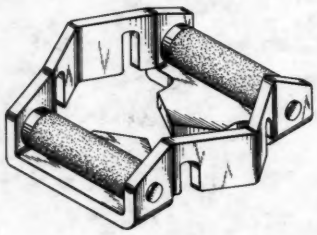
Jan L. Bohman, Säter, and Gunnar S. Milling, Falun, both of Sweden, assignors to Nordfor Teknik Aktiebolag, Vikmanshyttan, Sweden

Filed Dec. 6, 1983, Ser. No. 558,481

Claims priority, application Sweden, Jun. 8, 1983, 83-1578

Term of patent 14 years

U.S. Cl. D8—90



285,900

MULTI-FUNCTIONAL TOOL

Hing W. Chan, New Territories, Hong Kong, assignor to Hing Wah Houseware Manufactory Limited, Hong Kong

Filed Jul. 18, 1983, Ser. No. 515,312

Claims priority, application United Kingdom, Jan. 21, 1983, 831010945

Term of patent 14 years

U.S. Cl. D8—105

285,901

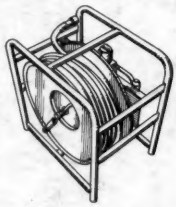
COMBINATION REEL AND HOSE UNIT

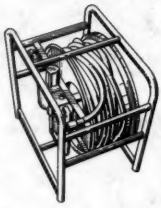
Jack Gustavsson, Sagmogatan 21, S-641 34 Katrineholm, Sweden

Filed Sep. 12, 1984, Ser. No. 649,694

Term of patent 14 years

U.S. Cl. D8—358





285,902

BOTTLE

Raimundo P. Fuidio, Vilasar de Mar, Spain, assignor to Productos Bufalo, S.A., Barcelona, Spain

Filed Mar. 15, 1984, Ser. No. 590,020

Claims priority, application Spain, Oct. 18, 1983, 104 812

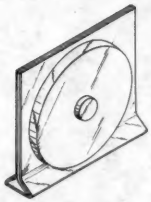
Term of patent 14 years

U.S. Cl. D9—319

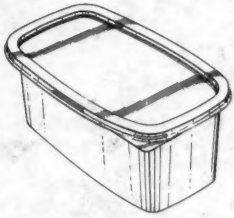
285,903
BOTTLE OR THE LIKE
Murray G. Courtman, Auckland, New Zealand, assignor to The Development Finance Corporation of New Zealand, Auckland, New Zealand
Filed May 15, 1984, Ser. No. 610,603
Claims priority, application New Zealand, Nov. 29, 1983, 18763
Term of patent 14 years
U.S. Cl. D9—341

285,904
BOTTLE FOR FLUID MEDICINES
Leif Holmstedt, Odense, Denmark, assignor to Aktiebolaget Hassle, Molndal, Sweden
Filed Aug. 31, 1983, Ser. No. 528,080
Claims priority, application Sweden, Mar. 1, 1983, 830559
Term of patent 14 years
U.S. Cl. D9—370

285,905
PACKAGING CONTAINER
William J. Segal, Torrance, Calif., assignor to Mr. Gasket Company, Cleveland, Ohio
Filed Jul. 22, 1983, Ser. No. 516,474
Term of patent 14 years
U.S. Cl. D9—415

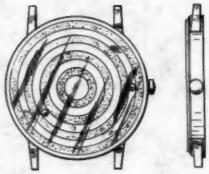


285,906
COMBINED PACKAGING CONTAINER AND LID
Frank S. Tyler, Kent, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Jan. 20, 1984, Ser. No. 572,488
Claims priority, application United Kingdom, Jul. 27, 1983, 1014338
Term of patent 14 years
U.S. Cl. D9—425

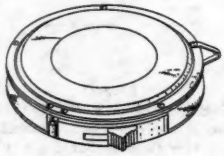


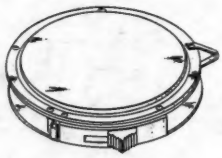
285,907
COMBINED BAG CLOSURE AND HANDLE
Edward M. Johnson, 30 Dunhill Dr., Voorhees, N.J. 08043
Filed May 18, 1984, Ser. No. 611,827
Term of patent 14 years
U.S. Cl. D9—443

285,908
WRIST WATCH
Jeffrey Maron, 248 Lafayette St., New York, N.Y. 10012
Filed Mar. 2, 1984, Ser. No. 585,510
Term of patent 14 years
U.S. Cl. D10—30

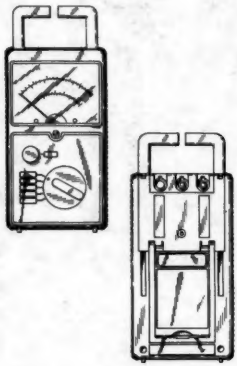


285,909
TAPE MEASURE WITH BRAKE
Robert D. Lamson, Seattle, Wash., assignor to Spencer Products, Inc., Seattle, Wash.
Filed Sep. 14, 1983, Ser. No. 532,573
Term of patent 14 years
U.S. Cl. D10—72

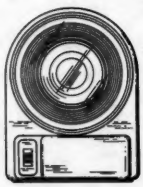




285,910
ELECTRICAL MEASURING INSTRUMENT
Peter G. Nichols, Dover; David C. Tedd, Folkestone; Terence M. Friend, Guston, Nr. Dover, and Christopher L. Steggall, London, all of England, assignors to Thorn EMI Instruments Limited, Dover, England
Continuation-in-part of Ser. No. 475,936, Mar. 16, 1983. This application Jun. 24, 1983, Ser. No. 507,600
Claims priority, application United Kingdom, Oct. 15, 1982, 1009279
Term of patent 14 years
U.S. Cl. D10—79

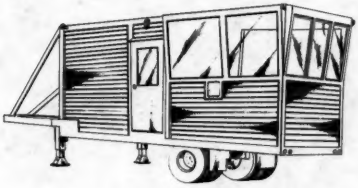


285,911
SAFETY FLASHER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 11, 1983, Ser. No. 483,535
Claims priority, application United Kingdom, Oct. 19, 1982, 1 009 316
The portion of the term of this patent subsequent to Dec. 4, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—114



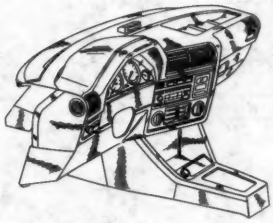
285,912
STICK FIGURE
Daniel I. Joffee, 5146-B Cleon St., North Hollywood, Calif. 91601
Filed Sep. 16, 1983, Ser. No. 532,838
Term of patent 14 years
U.S. Cl. D11—160

285,913
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Jan. 27, 1984, Ser. No. 574,606
Term of patent 14 years
U.S. Cl. D12—103



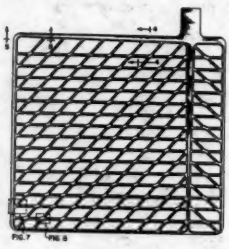
285,914
REAR VIEW MIRROR
Alberto Vitaloni, Turin, Italy, assignor to Vitaloni S.p.A., Beinasco, Italy
Filed Feb. 23, 1984, Ser. No. 582,882
Claims priority, application Italy, Sep. 12, 1983, 53709/83[U]
Term of patent 14 years
U.S. Cl. D12—189

285,915
COMBINED VEHICLE DASHBOARD AND CONSOLE UNIT
Claüs Luthe, Munich, and Hans Braun, Lohhof, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 24, 1983, Ser. No. 478,509
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13094
Term of patent 14 years
U.S. Cl. D12—192

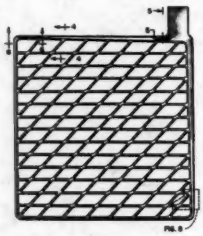


285,916
WHEEL
Hubert Walter, Penzberg, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany
Filed Mar. 24, 1983, Ser. No. 478,513
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13095
Term of patent 14 years
U.S. Cl. D12—211

285,917
BATTERY GRID
Carl Anderson, Hamburg, Pa., and Richard H. Craig, Trenton, N.J., assignors to General Battery Corporation, Reading, Pa.
Filed Oct. 21, 1983, Ser. No. 544,393
Term of patent 14 years
U.S. Cl. D13—10

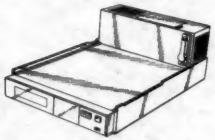


285,918
BATTERY GRID
Carl Anderson, Hamburg, Pa., and Richard H. Craig, Trenton, N.J., assignors to General Battery Corporation, Reading, Pa.
Filed Oct. 21, 1983, Ser. No. 544,405
Term of patent 14 years
U.S. Cl. D13—10

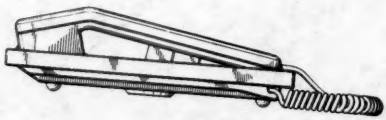


285,919
INSULATOR OR SIMILAR ARTICLE
Jimmy L. Sherrill, Rte. #10, Box 219, Cookeville, Tenn. 38501
Filed Oct. 25, 1983, Ser. No. 545,585
Term of patent 14 years
U.S. Cl. D13—18

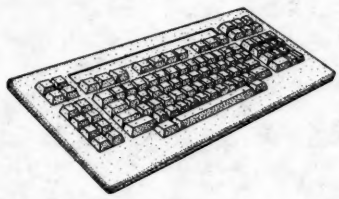
285,920
TELEVISION TUNER FOR A VIDEO TAPE RECORDER
Yoshinobu Kitakaze, Ehime, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 5, 1983, Ser. No. 558,395
Claims priority, application Japan, Jun. 3, 1983, 58-24062
Term of patent 14 years
U.S. Cl. D14—10



285,921
TELEPHONE SET
Hedda Beese, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Jun. 14, 1984, Ser. No. 620,416
Claims priority, application United Kingdom, Jan. 4, 1984, 1017154
Term of patent 14 years
U.S. Cl. D14—53

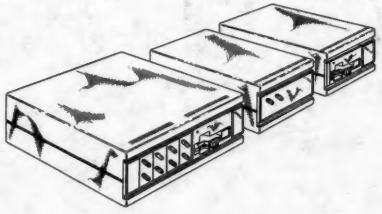


285,922
KEYBOARD
Diab E. Freige, Los Altos; Leroy B. Keely, Portola Valley, and Michael J. Nuttall, Palo Alto, all of Calif., assignors to Convergent Technologies, Inc., San Jose, Calif.
Filed May 8, 1984, Ser. No. 608,064
Term of patent 14 years
U.S. Cl. D14—100

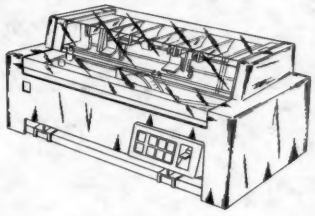


285,923
ARITHMETIC OPERATION CONTROL MACHINE FOR ELECTRONIC COMPUTERS
Tsuneo Takahashi, Kawagoe; Takaharu Andoh, and Keiichi Washizuka, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Mar. 7, 1984, Ser. No. 586,993
Claims priority, application Japan, Sep. 20, 1983, 58-40707
Term of patent 14 years
U.S. Cl. D14—100

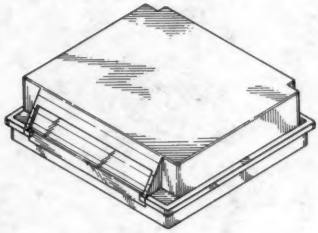
285,924
DATA PROCESSING SET
George A. Wilson, Portola Valley, and Raymond J. McKinnon, Jr., Castro Valley, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed Jul. 6, 1984, Ser. No. 628,356
Term of patent 14 years
U.S. Cl. D14—100



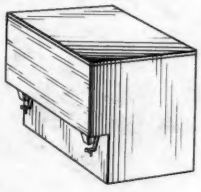
285,925
PRINTER
Myron F. Davis, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 7, 1983, Ser. No. 529,896
Term of patent 14 years
U.S. Cl. D14—111



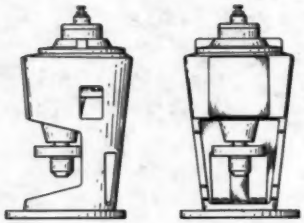
285,926
HOUSING FOR INTERFACE MODULE
Henry J. Kies, Darien, and William P. Loris, Bloomingdale, both of Ill., assignors to Rockwell International Corp., El Segundo, Calif.
Filed Dec. 14, 1983, Ser. No. 561,383
Term of patent 14 years
U.S. Cl. D14—114



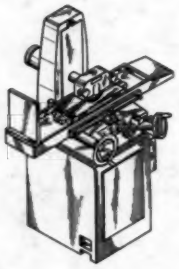
285,927
ICE DISPENSER
Robert M. Koeneman, Elmwood Park, and Albert L. Schafer, Chicago, both of Ill., assignors to Remcor Products Company, Franklin Park, Ill.
Filed Dec. 27, 1983, Ser. No. 565,988
Term of patent 14 years
U.S. Cl. D15—80



285,928
MIXER
Horst P. Engelbrecht, Canandaigua, and Edwin R. White, Springwater, both of N.Y., assignors to General Signal Corp., Rochester, N.Y.
Filed Feb. 8, 1984, Ser. No. 577,954
Term of patent 14 years
U.S. Cl. D15—122

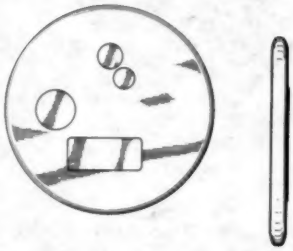


285,929
LIGHT GRINDING MACHINE
C. T. Cheng, Tai Chung Hsien, Taiwan, assignor to Rong Kuang Machinery Co. Ltd., Tai Chung Hsine, Taiwan
Filed Feb. 22, 1984, Ser. No. 582,464
Term of patent 14 years
U.S. Cl. D15—124



285,930
GRINDING WHEEL FOR A GRINDING MACHINE
Gunnar Olovsson, P.O. Box 3031, S-981 03 Kiruna, Sweden
Filed Oct. 28, 1983, Ser. No. 546,415
Claims priority, application Sweden, Apr. 29, 1983, 831219
Term of patent 14 years
U.S. Cl. D15—126

285,931
INTEGRATING PHOTOMETER
Joe T. May, Leesburg, and Steven D. Hale, Lovettsville, both of Va., assignors to Colight, Inc., Minneapolis, Minn. and Electronic Instrumentation & Technology, Sterling, Va.
Filed Feb. 3, 1984, Ser. No. 576,748
Term of patent 14 years
U.S. Cl. D16—39



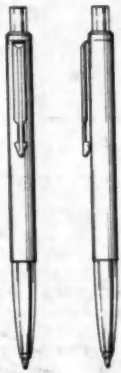
285,932
ELECTRIC GUITAR
Yoshiaki Hayashi, Matsumoto, Japan, assignor to Roland Corporation, Osaka, Japan
Filed Jan. 16, 1984, Ser. No. 571,084
Claims priority, application Japan, Oct. 11, 1983, 58-44197
Term of patent 14 years
U.S. Cl. D17—15

285,933
DESK-TOP ELECTRONIC CALCULATOR
Elichi Yoshioka, Abiko, and Kaname Suwa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 19, 1984, Ser. No. 672,690
Claims priority, application Japan, Jun. 1, 1984, 59-22804
Term of patent 14 years
U.S. Cl. D18—7

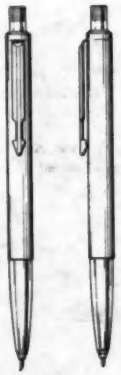
285,934
DESK-TOP ELECTRONIC CALCULATOR
Elichi Yoshioka, Abiko, and Kaname Suwa, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 19, 1984, Ser. No. 672,781
Claims priority, application Japan, Jun. 1, 1984, 59-22803
Term of patent 14 years
U.S. Cl. D18—7

285,935
DISPLAY APPARATUS FOR ELECTRONIC CALCULATOR
Akira Aihara, and Akira Miyakawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 9, 1984, Ser. No. 598,166
Claims priority, application Japan, Oct. 13, 1983, 58-44330
Term of patent 14 years
U.S. Cl. D18—12

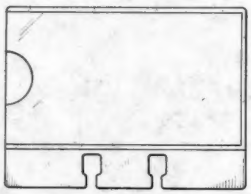
285,936
PUSH BUTTON BALL POINT PEN
Brian A. J. Booker, East Sussex, England; Harley A. Jung, Fort Atkinson, and Clemens A. Sonntag, Janesville, both of Wis., assignors to The Parker Pen Company, Janesville, Wis.
Filed Feb. 24, 1984, Ser. No. 583,331
The portion of the term of this patent subsequent to Sep. 30, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—51



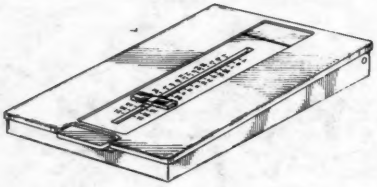
285,937
PUSH BUTTON MECHANICAL PENCIL
Brian A. J. Booker, East Sussex, England; Harley A. Jung, Fort Atkinson, and Clemens A. Sonntag, Janesville, both of Wis., assignors to The Parker Pen Company, Janesville, Wis.
Filed Feb. 24, 1984, Ser. No. 583,341
The portion of the term of this patent subsequent to Sep. 30, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—51



285,938
WINDOW FILE CARD
Daniel B. Ventres, Jr., 1355 Vine Pl., Mound, Minn. 55346
Filed Jan. 19, 1984, Ser. No. 571,919
Term of patent 14 years
U.S. Cl. D19—1

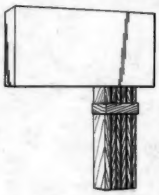


285,939
TELEPHONE INDEX OR THE LIKE
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan
Filed Mar. 15, 1984, Ser. No. 589,715
Claims priority, application Japan, Feb. 3, 1984, 59-3663
Term of patent 14 years
U.S. Cl. D19—76

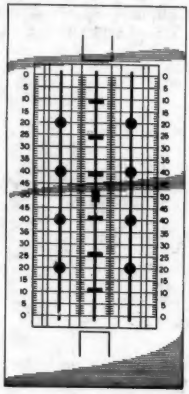


285,940
GIFT TAG
Loresa S. James, 4273 W. Manila Creek Dr., Pleasant Grove, Utah 84062
Filed Aug. 31, 1984, Ser. No. 646,254
Term of patent 14 years
U.S. Cl. D20—27

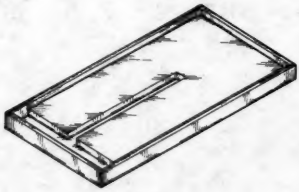
285,941
OUTDOOR ADVERTISING SUPPORT STRUCTURE
Daniel Wilhelm, 757 Commercial St., San Jose, Calif. 95112
Filed May 18, 1984, Ser. No. 612,066
Term of patent 14 years
U.S. Cl. D20—41



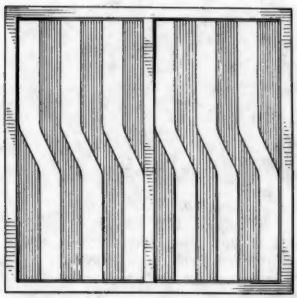
285,942
FOOTBALL DART BOARD
Michael Kemmeter, 4305 Williams Ave., Cincinnati, Ohio 45236
Filed Feb. 23, 1984, Ser. No. 583,003
Term of patent 14 years
U.S. Cl. D21—6



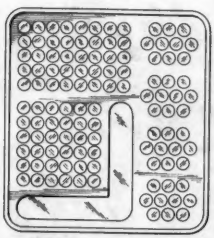
285,943
SHUFFLEBOARD GAME TABLE TOP
James W. Sadleir, 228 Gloucester Pike, Barrington, N.J. 08007
Filed Sep. 26, 1983, Ser. No. 535,920
Term of patent 14 years
U.S. Cl. D21—11



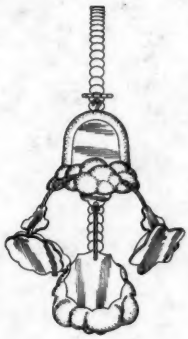
285,944
GAME BOARD
Columbus O'Donnell, c/o Resorts International, Inc. North Carolina Ave., Atlantic City, N.J. 08404
Filed Jun. 8, 1984, Ser. No. 618,557
Term of patent 14 years
U.S. Cl. D21—16



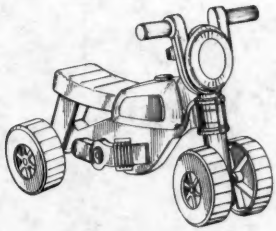
285,945
HOUSING FOR RANDOMLY SELECTING NUMBERS
George A. Stagg, Jr., Wayne, N.J., assignor to Pentad Corporation, Fairfield, N.J.
Filed Jan. 18, 1984, Ser. No. 571,892
Term of patent 14 years
U.S. Cl. D21—37



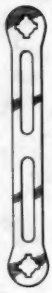
285,946
TOY MOBILE
Stephen M. Toth, Loveland, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed Feb. 13, 1984, Ser. No. 579,240
Term of patent 14 years
U.S. Cl. D21—63



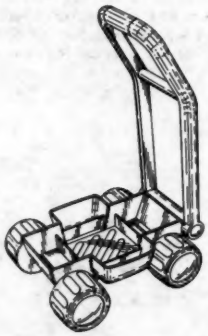
285,947
RIDING TOY VEHICLE
Martin Blumenthal, 99 Longview Ave., Chatham, N.J. 07928
Filed Sep. 19, 1983, Ser. No. 533,401
Term of patent 14 years
U.S. Cl. D21—76



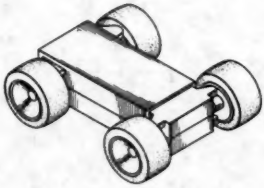
285,948
TOY CONSTRUCTION PIECE
Giuseppe Mazzoleni, Alessandria, Italy, assignor to Creative S.r.l., Italy
Filed May 25, 1984, Ser. No. 613,992
Claims priority, application Italy, Dec. 1, 1983, 54003/83[U]
Term of patent 14 years
U.S. Cl. D21—108



285,949
TOY CART
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Feb. 1, 1984, Ser. No. 576,016
Claims priority, application United Kingdom, Nov. 9, 1983, 1016183
Term of patent 14 years
U.S. Cl. D21—134



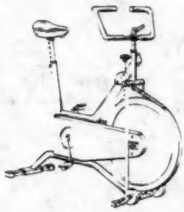
285,950
TOY VEHICLE CHASSIS
Fujio Arigaya, Tanashi, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1983, Ser. No. 549,669
Claims priority, application Japan, Apr. 10, 1983, 58-43096
The portion of the term of this patent subsequent to May 27, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—141



285,951
STUFFED TOY BEAR
Sarah L. Raymo, P.O. Box 17325, Phoenix, Ariz. 85011
Filed Mar. 19, 1984, Ser. No. 591,319
Term of patent 14 years
U.S. Cl. D21—159

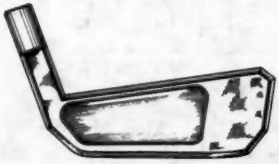
285,952
DOLL CLOWN HEAD AND BODY
Billy A. Morgan, 3163 Cedar Creek, Dallas, Tex. 75203
Continuation-in-part of Ser. No. 205,574, Nov. 10, 1980. This application Jun. 13, 1983, Ser. No. 503,721
Term of patent 14 years
U.S. Cl. D21—173

285,953
EXERCISE BICYCLE
Tore L. Gustafsson, Varberg, Sweden, assignor to Monark AB, Sweden
Filed Sep. 17, 1984, Ser. No. 651,436
Term of patent 14 years
U.S. Cl. D21—194

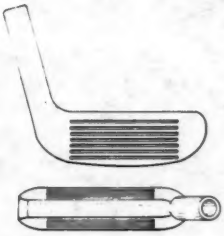


285,954
HEAD FOR GOLF CLUB
Noriyoshi Hasegawa, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Nov. 10, 1983, Ser. No. 550,446
Term of patent 14 years
U.S. Cl. D21—214

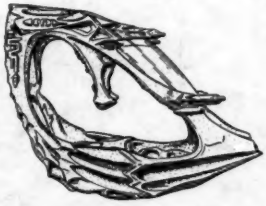
285,955
PUTTER HEAD
Edward Brayak, 5134 Dresden Way, Pittsburgh, Pa. 15201
Filed Feb. 9, 1984, Ser. No. 578,493
Term of patent 14 years
U.S. Cl. D21—217



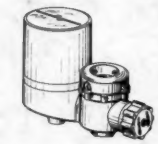
285,956
GOLF CLUB HEAD
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Nov. 21, 1983, Ser. No. 553,998
Term of patent 14 years
U.S. Cl. D21—220

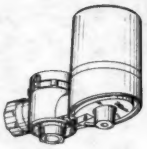


285,957
PASSENGER SEAT FOR AN AMUSEMENT RIDE
Michael J. Thornalley, Lincoln, United Kingdom, assignor to Fibrecast (UK) Limited, England
Filed Feb. 10, 1984, Ser. No. 578,830
Claims priority, application United Kingdom, Oct. 28, 1983, 1015923
Term of patent 14 years
U.S. Cl. D21—247

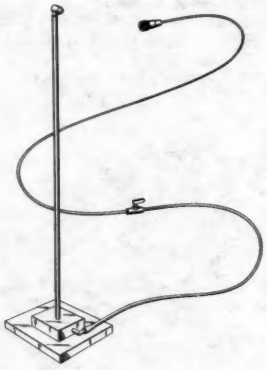


285,958
WATER FILTER
Hiroshi Koizumi, Tokyo; Hideki Takayama, Kiyose; Hikaru Kaji, Tokyo, and Masatoshi Tanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 25, 1984, Ser. No. 624,131
Claims priority, application Japan, Dec. 26, 1983, 58-55669
Term of patent 14 years
U.S. Cl. D23—4

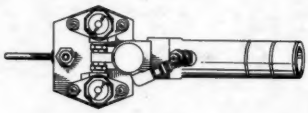


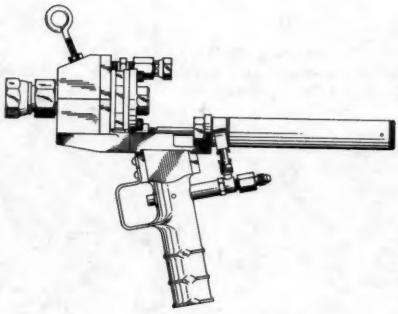


285,959
SUN BATHING SPRAY APPARATUS
Paul A. Figueroa, 901 N. Dianne St., Santa Ana, Calif. 92701
Filed Apr. 9, 1984, Ser. No. 598,252
Term of patent 14 years
U.S. Cl. D23—6

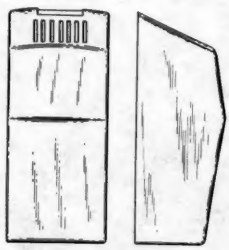


285,960
URETHANE FOAM GUN
David Keske, 1449 Bald Eagle Rd., St. Louis, Mo. 63038
Filed Nov. 4, 1983, Ser. No. 548,685
Term of patent 14 years
U.S. Cl. D23—17

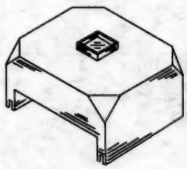




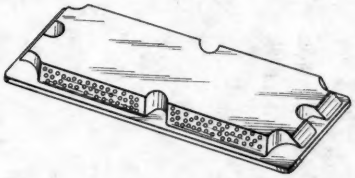
285,961
ROOM DEODORIZER DISPENSER
David J. Pennell, 14 Melbourne Grove, Haslington, Crewe, Cheshire, England
Filed Aug. 15, 1984, Ser. No. 640,957
Claims priority, application United Kingdom, Feb. 20, 1984, 1018026
Term of patent 14 years
U.S. Cl. D23—150



285,962
EXHAUST HOOD
Robert Yoho, 12900 Automobile Blvd., Clearwater, Fla. 33520
Filed May 17, 1984, Ser. No. 611,546
Term of patent 14 years
U.S. Cl. D23—151

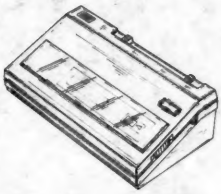


285,963
VENTILATOR FOR A FREIGHT CONTAINER
Paul F. Morgan, Bridgewater, N.J., assignor to CTI International, Inc., White Plains, N.Y.
Filed Apr. 7, 1983, Ser. No. 482,877
The portion of the term of this patent subsequent to Jul. 29, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—151



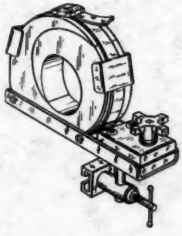
285,964
COMBINED STETHOSCOPE AND DIGITAL TIME PIECE
Michael P. Ziebol, #4 Crepe Myrtle, St. Rose, La. 70087
Filed Feb. 19, 1985, Ser. No. 702,830
Term of patent 14 years
U.S. Cl. D24—17

285,965
SPHYGMOMANOMETER
Hiroshi Nishibori, and Harumi Fukuda, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 13, 1984, Ser. No. 570,533
Term of patent 14 years
U.S. Cl. D24—21



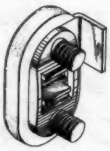
285,966
PILL CRUSHER
John F. Porter, 5019 Newport Ave., Bethesda, Md. 20816
Filed Jul. 12, 1983, Ser. No. 513,098
Term of patent 14 years
U.S. Cl. D24—23

285,967
SURGICAL LEG CLAMP
William J. Murphy, Saginaw, Mich., assignor to Saginaw Automation & Machine, Inc., Saginaw, Mich.
Filed Mar. 3, 1983, Ser. No. 471,757
Term of patent 14 years
U.S. Cl. D24—27



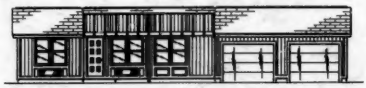
285,968
GLENOID PROSTHESIS COMPONENT FOR TOTAL SHOULDER PROSTHESIS SYSTEM
James G. Kinnett, 5534 St. Charles Ave., New Orleans, La. 70115
Filed Jan. 31, 1984, Ser. No. 575,930
Term of patent 14 years
U.S. Cl. D24—33

285,969
ACROMIAL PROSTHESIS COMPONENT FOR TOTAL SHOULDER PROSTHESIS SYSTEM
James G. Kinnett, 5534 St. Charles Ave., New Orleans, La. 70115
Filed Feb. 1, 1984, Ser. No. 576,131
Term of patent 14 years
U.S. Cl. D24—33

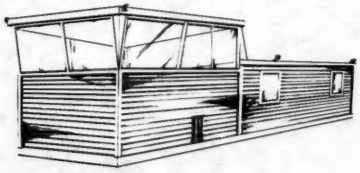


285,970
FLIP-UP DOUCHE BOTTLE
Robert W. Pritchard, Pittsburgh, Pa., assignor to Beecham Inc., Clifton, N.J.
Filed Jan. 19, 1984, Ser. No. 572,187
Term of patent 14 years
U.S. Cl. D24—60

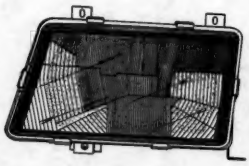
285,971
MODULAR RESIDENTIAL BUILDING
Keith E. Marty, Columbus, Ohio, assignor to Cardinal Industries, Inc., Columbus, Ohio
Filed Jan. 4, 1984, Ser. No. 568,041
Term of patent 14 years
U.S. Cl. D25—22



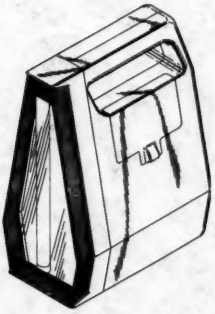
285,972
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Jan. 27, 1984, Ser. No. 574,607
Term of patent 14 years
U.S. Cl. D25—33



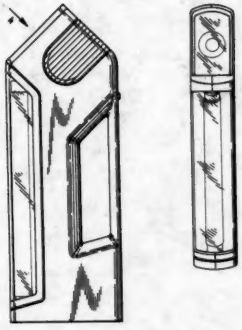
285,973
HEAD LIGHT FOR AN AUTOMOBILE
Björn E. A. Envall, Vänersborg, Sweden, assignor to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Apr. 24, 1984, Ser. No. 603,955
Claims priority, application Sweden, Oct. 26, 1983, 83-2772
Term of patent 14 years
U.S. Cl. D26—28



285,974
COMBINED FLUORESCENT AND INCANDESCENT LANTERN
Chung S. Leung, Tsuen Wan, Hong Kong, assignor to Foster Industries Company Limited, Tsuen Wan, Hong Kong
Filed Jun. 20, 1984, Ser. No. 623,768
Claims priority, application United Kingdom, Apr. 27, 1984, 1019333
Term of patent 14 years
U.S. Cl. D26—42



285,975
COMBINED LANTERN, FLASHLIGHT AND WARNING LAMP
Lai K. Ma, Kowloon, Hong Kong, assignor to Sonca Industries Limited, Kowloon, Hong Kong
Filed Feb. 22, 1984, Ser. No. 582,592
Claims priority, application United Kingdom, Oct. 25, 1983, 1015859
Term of patent 14 years
U.S. Cl. D26—42



285,976
SPOTLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jul. 10, 1984, Ser. No. 629,506
Claims priority, application United Kingdom, Jan. 19, 1984, 1017424
Term of patent 14 years
U.S. Cl. D26—48

285,977
SWINGING LAMP
Gionatan De Pas; Donato D'Urbino, both of Milan, and Paolo Lomazzi, San Felice Milan, all of Italy, assignors to Artemide S.p.A., Pregnana Milanese, Italy
Filed Jan. 17, 1984, Ser. No. 571,411
Claims priority, application Italy, Jul. 27, 1983, 22517B/83
Term of patent 14 years
U.S. Cl. D26—90

285,978
LAMP
Lois Rice, One Fifth Ave., New York, N.Y. 10003
Filed Feb. 29, 1984, Ser. No. 584,751
Term of patent 14 years
U.S. Cl. D26—107

285,979
DRY SHAVER
Teizoh Satoh, and Mararu Miyazaki, both of Tokyo, Japan, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 30, 1984, Ser. No. 645,636
Claims priority, application Benelux, Mar. 12, 1984, 58805-01
Term of patent 14 years
U.S. Cl. D28—50

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF SEPTEMBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aba-Jbara, Nabil M.: *See—*
Pavlov, Leonidas P.; and Aba-Jbara, Nabil M., 4,614,861, Cl. 235-380.000.

Abbott Laboratories: *See—*
Kirkemo, Curtis L.; and Shipchandler, Mohammed T., 4,614,823, Cl. 544-300.000.
Larkin, Mark E., 4,614,267, Cl. 206-221.000.
Tripp, Edward S.; and Larkin, Mark E., 4,614,515, Cl. 604-403.000.

Abdey, Gordon J.: *See—*
Reilly, John T.; Hobson, Roy B.; and Abdey, Gordon J., 4,614,612, Cl. 252-541.000.

Abe, Ryozo: *See—*
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.

Addamiano, Arrigo, to United States of America, Navy. Liquid phase epitaxy (LPE) of silicon carbide. 4,614,672, Cl. 427-249.000.

Adler, Alan J., to Ampex Corporation. Phase scatter detection and reduction circuit and method. 4,615,037, Cl. 375-12.000.

Adorian, Iudita L.: *See—*
Duruz, Jean J.; Derivaz, Jean-Pierre; Debely, Pierre-Etienne; and Adorian, Iudita L., 4,614,569, Cl. 204-67.000.

Adrian, Donald J.; Christensen, Lawrence E.; and Hanselman, James C., to United States of America, Navy. Frequency generator with digitally controlled phase modulation. 4,614,918, Cl. 332-16.00R.

Advanced Micro Devices, Inc.: *See—*
Rinerson, Darrell D.; and Chuang, Patrick T., 4,615,020, Cl. 365-184.000.

Aeroquip Corporation: *See—*
Fournier, Paul J. E., 4,614,348, Cl. 277-188.00A.

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Teshima, Kiyomi; Kajitani, Yukimasa; Takeya, Kazuo; and Miyagawa, Takuya, 4,614,083, Cl. 60-39.530.

AGFA-Gevaert, N.V.: *See—*
Timmerman, Daniel M.; Priem, Jan J.; and Janssens, Wilhelmus, 4,614,708, Cl. 430-517.000.

Agostinelli, John A.: *See—*
Mir, Jose M.; and Agostinelli, John A., 4,614,408, Cl. 350-388.000.

Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, to Robert Bosch GmbH. Dynamo electric machine construction, particularly for combination with a pump unit. 4,614,887, Cl. 310-166.000.

Ahola, Clifford J.: *See—*
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,614,310, Cl. 241-259.200.

Aikawa, Masaru: *See—*
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,614,954, Cl. 346-160.000.

Airstream, Inc.: *See—*
Sullivan, John W., 4,614,247, Cl. 180-24.020.

Aisin Seiki Company, Ltd.: *See—*
Harada, Kuniyoshi; and Yamada, Yukifumi, 4,614,257, Cl. 192-8.00C.

Aisin Seiki K.K.: *See—*
Umebayashi, Kazuyuki, 4,614,839, Cl. 179-2.00E.

Aisin Seiki Kabushiki Kaisha: *See—*
Kakinami, Toshiaki; and Yasuda, Tomio, 4,614,248, Cl. 180-79.100.
Omi, Atsushi, 4,614,149, Cl. 92-98.00D.

Aisin-Warner, K.K.: *See—*
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,614,256, Cl. 192-4.00A.

Aizawa, Tadashi: *See—*
Nagasawa, Kiyoshi; Kuroyanagi, Mitsuhiro; and Aizawa, Tadashi, 4,614,045, Cl. 34-34.000.

Akai, Tokio: *See—*
Kurome, Shosaku; Akai, Tokio; and Maeda, Takahiro, 4,614,153, Cl. 99-511.000.

Akao, Yasushi: *See—*
Maejima, Hideo; Katsura, Koyo; Kihara, Toshimasa; and Akao, Yasushi, 4,615,005, Cl. 364-200.000.

Akatsu, Tsuneo: *See—*
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Ohara, Minoru; Kobayashi, Akira; and Akatsu, Tsuneo, 4,614,733, Cl. 514-54.000.

Akita, Shuichi: *See—*
Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, 4,614,771, Cl. 525-351.000.

Akiyama, Nobuyuki: *See—*
Koizumi, Mitsuyoshi; Oshima, Yoshimasa; Akiyama, Nobuyuki; and Yachi, Toshiaki, 4,614,427, Cl. 356-237.000.

Akiyama, Yuichi: *See—*
Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, 4,614,230, Cl. 165-151.000.

Akizuki, Osamu: *See—*
Saito, Kimiharu; and Akizuki, Osamu, 4,614,895, Cl. 313-429.000.

Albert, William G.; Astell, Gerald G.; Favale, Anthony G.; and Steiff, Leon H., to AT&T Bell Laboratories. Circuit board assembly for accurate insertion. 4,614,389, Cl. 339-45.00M.

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Fortin, Paul E.; and Bull, Michael J., 4,614,552, Cl. 148-417.000.
Jeffrey, Paul W.; Sulzer, John; and Ashley, Peter J., 4,614,224, Cl. 164-476.000.

Aleem, Mohd A.: *See—*
Mosher, Philip C.; and Aleem, Mohd A., 4,614,888, Cl. 310-261.000.

Allen, Larry D., to Boeing Company, The. Power driven rotary floor preparation device. 4,614,380, Cl. 299-41.000.

Allied Corporation: *See—*
Guillet, James E., 4,614,703, Cl. 430-271.000.
Kane, Robert P.; Lillie, Edwin D.; and Neidig, John D., 4,614,837, Cl. 174-68.500.
Mathew, Chempolil T.; and Ulmer, Harry E., 4,614,813, Cl. 558-7.000.
Zupancic, Joseph J.; and Swedo, Raymond J., 4,614,769, Cl. 525-327.100.
Zupancic, Joseph J.; and Swedo, Raymond J., 4,614,770, Cl. 525-327.100.

Allred, John C. Method of manufacturing acoustic panels for controlling reverberation of sound in enclosed environments. 4,614,553, Cl. 156-39.000.

Alonge, Paul J.: *See—*
Lauchner, John K.; Christensen, Michael S.; and Alonge, Paul J., 4,614,878, Cl. 307-106.000.

Alpha Industries, Inc.: *See—*
Borzym, Alexander, 4,614,139, Cl. 83-300.000.

Alps Electric Co., Ltd.: *See—*
Arazu, Shuichi; Tamukai, Tadao; and Fujisawa, Kyuichi, 4,615,012, Cl. 364-520.000.
Sasao, Yasuo, 4,614,847, Cl. 200-6.00A.

Alster, Louis G., to Caterpillar Industrial Inc. Fiber optic seam tracking apparatus. 4,614,868, Cl. 250-227.000.

Alsthom-Atlantique: *See—*
Labbe , Roland; and Rodriguez, Francis, 4,614,459, Cl. 405-170.000.

Altman, James E. Cutter for plaster board and the like. 4,614,138, Cl. 83-51.000.

Aluminum Company of America: *See—*
Grubbs, Donald K., 4,614,641, Cl. 423-127.000.

Aluminum Pechiney: *See—*
Cristol, Benoit; and Mordini, Jacques, 4,614,642, Cl. 423-127.000.

Amagai, Akikazu: *See—*
Sugio, Akitoshi; Okabe, Masao; and Amagai, Akikazu, 4,614.773, Cl. 525-391.000.

Amano, Yoshiaki: *See—*
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.

AMAX Inc.: *See—*
Duyvesteyn, Willem P. C.; and Jha, Mahesh C., 4,614,543, Cl. 75-101.00R.

Ambrosi, Luciano; von Ploetz, Klaus; Zangs, Ludger; and Nordmeyer, Friedrich, to Mannesmann AG. Cooling the electrode connection in an arc furnace. 4,615,036, Cl. 373-93.000.

American Cyanamid Company: *See—*
Asato, Goro; and Bentley, Terence J., 4,614,746, Cl. 514-524.000.
Kozakiewicz, Joseph J., 4,614,784, Cl. 527-313.000.
Murdock, Keith C.; and Durr, Frederick E., 4,614,618, Cl. 260-380.000.

American District Telegraph Company: *See—*
Rattman, William J.; Marchetti, Stephen; and Galvin, Aaron A., 4,614,968, Cl. 358-93.000.

American Filtrona Corporation: *See—*
Berger, Richard M., 4,614,199, Cl. 131-362.000.

American Home Products Corporation: *See—*
Buzby, George C., Jr.; Winkley, Michael W.; and McCaully, Ronald J., 4,614,806, Cl. 548-491.000.

American Sterilizer Company: *See—*
Nagare, Arthur T.; Mueller, Wolfgang; Fendya, Thomas J.; and Sestak, Joseph T., 4,614,015, Cl. 29-239.000.

Amoco Corporation: *See—*
Valcho, Joseph J.; Slama, Francis J.; Strukl, Joseph S.; and Park, Chang-Man, 4,614,602, Cl. 252-33.300.

AMP Incorporated: *See—*
Baker, Robert W., 4,614,390, Cl. 339-61.00R.
Caron, Bernard G.; and Cooper, Ronald F., 4,614,402, Cl. 350-96.210.
Powell, Francis R., 4,614,388, Cl. 339-17.00C.

Ampex Corporation: *See—*
Adler, Alan J., 4,615,037, Cl. 375-12.000.

Anderson, John D.; and MacGregor, James W., to General Motors Corporation. Foundry core for crosshead piston head member. 4,614,219, Cl. 164-369.000.

Andersson, Per-Erik; and Welander, Thomas G., to Purac Aktiebolag. Wastewater treatment method. 4,614,587, Cl. 210-603.000.

Ando, Hisashi: *See—*
Kajiyama, Hiroshi; Minemura, Tetsuro; Ando, Hisashi; and Konno, Kiyoshi, 4,614,692, Cl. 429-44.000.

Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, to NGK Spark Plug Co., Ltd. Alumina porcelain composition. 4,614,725, Cl. 501-136.000.

Ando, Yasuo: *See—*
Hashimoto, Takafumi; Ando, Yasuo; and Jinnai, Kenichiro, 4,614,693, Cl. 429-72.000.

Andrasi, Ferenc: *See—*
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Andre, Guy, to Raymond, A. Pipe clip. 4,614,321, Cl. 248-74.200.

Andrews, William M. Hand held apparatus for destroying hypodermic needles. 4,614,035, Cl. 30-124.000.

Anic S.p.A.: *See—*
Cognigni, Franco; and Mariano, Armando, 4,614,815, Cl. 560-88.000.

Ant Nachrichtentechnik GmbH: *See—*
Weidenbruch, Hans U.; and Musmann, Hans G., 4,614,936, Cl. 340-347.0AD.

Antoine, Claude; and Zuckmeyer, Bruno, to Guinard Centrifugation. Rotary machine, in particular a centrifuge having a means for protecting the rolling bearings. 4,614,447, Cl. 384-616.000.

Aoki, Tsutomu: *See—*
Nagata, Wataru; Aoki, Tsutomu; and Nishitani, Yasuhiro, 4,614,797, Cl. 540-226.000.

Apothekernes Laboratorium A.S.: *See—*
Weibye, Bjarne, 4,614,660, Cl. 426-461.000.

Appl, Max; Molin, Gerhard D.; Goesele, Wilhelm; Schreiner, Siegfried; and Treiber, Gert, to BASF Aktiengesellschaft. Stabilized sodium dithionite formulations containing inert organic liquids, and the use of these formulations. 4,614,647, Cl. 423-515.000.

Applied Plastics Co., Inc.: *See—*
Bibby, Kenneth; and Ring, Frank R., Jr., 4,614,022, Cl. 29-596.000.

Aprica Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,614,454, Cl. 403-62.000.

Aquino, Agostino: *See—*
Simelunas, William J.; Aquino, Agostino; and Polifroni, Nicholas, 4,614,154, Cl. 100-116.000.

Arai, Shinobu: *See—*
Nagano, Ryuzo; Arai, Shinobu; and Matsui, Koji, 4,614,043, Cl. 33-529.000.

Arai, Takao: *See—*
Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, 4,614,934, Cl. 40-347.0DA.

Arazu, Shuichi; Tamukai, Tadao; and Fujisawa, Kyuichi, to Alps Electric Co., Ltd. Method of generating character patterns. 4,615,012, Cl. 364-520.000.

Arch, David K.; Scott, M. Walter; Smith, Darryl L.; and Weisberg, Leonard R., to Honeywell Inc. Electromagnetic radiation detectors. 4,614,957, Cl. 357-16.000.

Argazzi, Ivo, to IMA - Industria Macchine Automatiche SpA. Method and apparatus for processing and packaging in boxes tubular squeezable containers. 4,614,073, Cl. 53-54.000.

Argyle, Charles S.: *See—*
Proctor, Robert H.; Hobbs, Arthur G., Jr.; and Argyle, Charles S., 4,614,231, Cl. 165-153.000.

Arieh, Simon; and Courvoisier, Guy, to Lange International S.A. Ski boot closing and tightening apparatus. 4,614,047, Cl. 36-50.000.

Arioli & C S.R.L.: *See—*
Beretta, Mario, 4,614,096, Cl. 68-22.00R.

Armstrong World Industries, Inc.: *See—*
Fry, William F.; and Sitler, Rickie L., 4,614,556, Cl. 156-78.000.
Fry, William F.; and Sitler, Rickie L., 4,614,680, Cl. 428-158.000.
Shannon, Paul J., 4,614,619, Cl. 260-397.200.

Arndt, Peter J.; Wenzel, Franz; Muller, Manfred; and Schlosser, Fritz, to Rohm GmbH. Method for isolating vinyl salt compounds from aqueous solutions. 4,614,827, Cl. 556-131.000.

Arseneault, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., to Universite Laval. Simulator for use as a neurosurgical aid in determining potential paths for the implantation of probes through the human body. 4,614,499, Cl. 434-262.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Fukui, Tsutomu, 4,614,981, Cl. 358-337.000.

Asato, Goro; and Bentley, Terence J., to American Cyanamid Company. 5-fluorobenzonitrile derivatives for increasing the lean meat to fat ratio and/or enhancing the growth rate of warm-blooded animals. 4,614,746, Cl. 514-524.000.

Asaumi, Seiji: *See—*
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,614,954, Cl. 346-160.000.

Asayama, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Engine exhaust gas recirculation control system. 4,614,175, Cl. 123-571.000.

Asea Stal AB: *See—*
Bergkvist, Jorgen, 4,614,167, Cl. 122-4.00D.

Ashida, Kaneyoshi; van der Loos, Jozef L. M.; and Frisch, Kurt C. Process for preparing an N-substituted carbamoyl-lactam compound. 4,614,615, Cl. 540-525.000.

Ashland Oil Inc.: *See—*
Goel, Anil B.; Blackburn, Peggy A.; and Tufts, Timothy A., 4,614,786, Cl. 528-60.000.
Walters, Paul W.; Raiche, H. Anthony; Harness, Ronald L.; and Quodala, Genaro M., 4,614,726, Cl. 502-41.000.

Ashley, Peter J.: *See—*
Jeffrey, Paul W.; Sulzer, John; and Ashley, Peter J., 4,614,224, Cl. 164-476.000.

Ashton, John E. U.: *See—*
Eales, Brian A.; Bricheno, Terry; Leggett, Norman D.; and Ashton, John E. U., 4,615,031, Cl. 372-36.000.

Astell, Gerald G.: *See—*
Albert, William G.; Astell, Gerald G.; Favale, Anthony G.; and Steiff, Leon H., 4,614,389, Cl. 339-45.00M.

AT&T Bell Laboratories: *See—*
Albert, William G.; Astell, Gerald G.; Favale, Anthony G.; and Steiff, Leon H., 4,614,389, Cl. 339-45.00M.
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.
Feldman, Martin; Heimann, Peter A.; Johnson, William A.; Retajczyk, Theodore F., Jr.; and White, Donald L., 4,614,433, Cl. 356-401.000.
Holbrook, Walter R.; Reynolds, Claude L., Jr.; Shimer, Julie A.; and Temkin, Henryk, 4,615,032, Cl. 372-45.000.
Hudgins, Walter R., Jr., 4,615,001, Cl. 364-200.000.

AT&T Information Systems Inc.: *See—*
Lim, Tong L., deceased; Yu, Keung-Yi P., executor; and Gitlin, Richard D., 4,615,038, Cl. 375-14.000.

AT&T Technologies, Inc.: *See—*
Gemra, Richard J.; and Martinez, Manuel, 4,614,399, Cl. 339-205.000.

Atkins, Ronald L.: *See—*
Willer, Rodney L.; and Atkins, Ronald L., 4,614,800, Cl. 544-335.000.

Atlantic Richfield Company: *See—*
Dean, Barry D., 4,614,765, Cl. 525-93.000.
Dean, Barry D., 4,614,767, Cl. 525-150.000.
Dean, Barry D., 4,614,776, Cl. 526-204.000.

Atochem: *See—*
Ganga, Roland A., 4,614,678, Cl. 428-74.000.

Attig, Thomas G.; Graham, Anne M.; and Pesa, Frederick, to Standard Oil Company, The. Ruthenium-copper-containing, activated-carbon-supported catalyst and process for making alcohol using same. 4,614,750, Cl. 518-713.000.

Audio Precision, Inc.: *See—*
Hofer, Bruce E., 4,614,914, Cl. 330-149.000.

Audiometrics, Inc.: *See—*
King, James T.; and Beatty, Charles W., Jr., 4,615,007, Cl. 364-415.000.

Ault, John C., to Pulstar Corporation. Pulsed motor starter for use with a photovoltaic panel. 4,614,879, Cl. 307-130.000.

Austin, Stephen B. Permanent dredge system. 4,614,458, Cl. 405-74.000.

Awasaka, Moriyoshi: *See—*
Kaneko, Teruji; Kawabe, Toshihiko; and Awasaka, Moriyoshi, 4,614,090, Cl. 62-158.000.

Axia Incorporated: *See—*
Carpenter, Charles L.; Carter, Jerry L.; and McElwee, Terry D., 4,614,836, Cl. 174-51.000.

Azzarella, Michael; and Luth, Frederick L., to Coral, Inc. Method of water treatment. 4,614,595, Cl. 210-754.000.

B. F. Goodrich Company, The: *See—*
Jones, Robert F., 4,614,562, Cl. 156-420.000.

Baader, Edward J. H-terminal assembly. 4,614,391, Cl. 339-91.00R.

Babcock-Hitachi Kabushiki Kaisha: *See—*
Hori, Katsuyoshi; Kagawa, Takeshi; Kusano, Kazuki; and Takuwa, Toshiaki, 4,614,856, Cl. 219-130.210.

Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., to AT&T Bell Laboratories. Geographically distributed multiprocessor time-shared communication processing system. 4,614,841, Cl. 179-18.0ES.

Bach, Stanley M., Jr.: *See—*
Imran, Mir; Bach, Stanley M., Jr.; and Kolenik, Steve A., 4,614,192, Cl. 128-419.00D.

Bachler, Werner; Forth, Hans-Joachim; and Klein, Hans-Hermann, to Leybold-Heraeus GmbH. Method of starting and/or regenerating a cryopump and a cryopump therefor. 4,614,093, Cl. 62-55.500.

Baesler, Linda A.: *See—*
McCracken, Robert W.; and Baesler, Linda A., 4,614,183, Cl. 128-132.00R.

Bailey, Horace A.; and Grier, Jack B., to Kennecott Corporation. Method and apparatus for cleaning workpieces. 4,614,064, Cl. 51-420.000.

Baird, Peter K.: *See—*
Mehra, Ravinder C.; Relyea, Robert G.; and Baird, Peter K., 4,614,585, Cl. 210-433.200.
Baker, Robert W., to AMP Incorporated. Lead sealing assembly. 4,614,390, Cl. 339-61.00R.
Balakrishnan, Ramanatha V.: *See—*
Li, Gabriel M. Y.; Carinalli, Charles P.; and Balakrishnan, Ramanatha V., 4,615,039, Cl. 375-36.000.
Baldwin, Thomas O.; Holzman, Thomas F.; Satoh, Paul S.; and Yein, Frederick S., to Upjohn Company, The; and Texas A&M University System. Immunoassays with luciferase labeled ligands or receptors. 4,614,712, Cl. 435-4.000.
Ball Corporation: *See—*
Straw, David A., 4,614,104, Cl. 72-347.000.
Balzer, Wolf-Dieter: *See—*
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,614,604, Cl. 252-56.00S.
Ban, Akos: *See—*
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, 4,614,540, Cl. 75-59.130.
Ban, Masuo, to Shimano Industrial Company Limited. Spinning reel. 4,614,314, Cl. 242-84.20G.
Bando Chemical Industries, Ltd.: *See—*
Ueno, Toshihiko; and Tanimoto, Sadao, 4,614,287, Cl. 226-74.000.
Banton, Martin E.: *See—*
Daniele, Joseph J.; and Banton, Martin E., 4,614,908, Cl. 324-458.000.
Barclay, Randel L. Shearing machine for reducing chunks of rubber and like material to smaller pieces. 4,614,308, Cl. 241-154.000.
Barsotti, Robert J., to Du Pont de Nemours, E. I., and Company. Chip resistant primer composition. 4,614,683, Cl. 428-220.000.
Bartman, Nicholas: *See—*
Frampton, Jeffery A.; and Bartman, Nicholas, 4,614,376, Cl. 296-224.000.
BASF Aktiengesellschaft: *See—*
Appl, Max; Molin, Gerhard D.; Goesele, Wilhelm; Schreiner, Siegfried; and Treiber, Gert, 4,614,647, Cl. 423-515.000.
Dietze, Herbert; Huebner, Dietmar; Wagner, Friedhelm; Duebon, Manfred; and Wenz, Gerd, 4,614,269, Cl. 206-387.000.
Epple, Gerhard; Krallmann, Reinhold; Kermer, Wolf-Dieter; and Weber, Hans, 4,614,804, Cl. 548-160.000.
Fikentscher, Rolf; Schneider, Siegfried; Klahr, Erhard; Reinert, Friedrich; Eckert, Gunter; and Stuebinger, Adolf, 4,614,613, Cl. 548-964.000.
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,614,604, Cl. 252-56.00S.
BASF Corporation: *See—*
Christman, Donald L., 4,614,754, Cl. 521-167.000.
Batchelor, William H., to Propane Carburetion Systems, Inc. Control valve for dual fuel operation of an internal combustion engine. 4,614,168, Cl. 123-27.0GE.
Bate, Cecil A.; and Robinson, Kay, to Payen International Limited. Method of making a gasket. 4,614,554, Cl. 156-62.200.
Bates, H. John, to NL Industries, Inc. Control valve system for blowout preventers. 4,614,148, Cl. 91-420.000.
Battelle Development Corporation: *See—*
Maringer, Robert E., 4,614,222, Cl. 164-463.000.
Batti, Stephen A.: *See—*
Gigandet, Richard W.; and Batti, Stephen A., 4,615,014, Cl. 364-557.000.
Battocletti, Frank E.; and Hammond, Scott H., to TransData, Inc. Electronic energy and power monitoring apparatus. 4,615,009, Cl. 364-483.000.
Bauder, Kurt, to Carl Freudenberg, Firma. Ring. 4,614,371, Cl. 285-231.000.
Bauer, Jeffrey J. Fishing rod holder. 4,614,323, Cl. 248-515.000.
Bauer, Klaus: *See—*
Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,614,535, Cl. 71-92.000.
Bauman, Ralph E.; and Seymour, Horace W., III, to Sanders Associates, Inc. Compact delay line. 4,614,922, Cl. 333-161.000.
Baumgen, Heinz: *See—*
Sackmann, Gunter; Beck, Ulrich; and Baumgen, Heinz. 4,614,759, Cl. 524-549.000.
Schroer, Wolf-Dieter; Beck, Ulrich; Mummenhoff, Peter; and Baumgen, Heinz, 4,614,546, Cl. 106-213.000.
Bausch & Lomb Incorporated: *See—*
Ogunbiyi, Lai; Riedhammer, Thomas M.; and Smith, Francis X., 4,614,549, Cl. 134-19.000.
Baxter, Ivor R.; and Hair, Thomas, to Marconi Company Limited, The. Passive target detector. 4,614,426, Cl. 356-1.000.
Bayer Aktiengesellschaft: *See—*
Dicke, Hans-Rudolf; and Kauth, Hermann, 4,614,789, Cl. 528-128.000.
Ebneth, Harold; Preis, Lothar; Giesecke, Henning; and Wolf, Gerhard D., 4,614,684, Cl. 428-252.000.
Harnisch, Horst, 4,614,713, Cl. 435-21.000.
Neeff, Rutger, deceased; Rolf, Meinhard; and Muller, Walter, 4,614,547, Cl. 106-288.00Q.
Reiss, Gerhard, 4,614,525, Cl. 55-25.000.
Richter, Roland; Muller, Hanns P.; Kubitza, Werner; Engbert, Theodor; and Mennicken, Gerhard, 4,614,785, Cl. 528-45.000.
Riebel, Hans-Jochem; Eue, Ludwig; Faust, Wilfried; and Priesnitz, Uwe, 4,614,537, Cl. 71-94.000.
Sackmann, Gunter; Beck, Ulrich; and Baumgen, Heinz, 4,614,759, Cl. 524-549.000.
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, 4,614,533, Cl. 71-92.000.
Schroer, Wolf-Dieter; Beck, Ulrich; Mummenhoff, Peter; and Baumgen, Heinz, 4,614,546, Cl. 106-213.000.
Schwabe, Peter; and Voigt, Reiner, 4,614,758, Cl. 524-487.000.
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,614,532, Cl. 71-92.000.
Steinbach, Hans-Horst; and Rieder, Matthias, 4,614,633, Cl. 264-338.000.
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lurssen, Klaus, 4,614,534, Cl. 71-92.000.
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.
Weber, Hans-Leo; Claussen, Uwe; and Hannes, Hellmut, 4,614,634, Cl. 264-341.000.
Bazell, Seymour; and Goldberg, Edward M. Balloon catheter. 4,614,188, Cl. 128-348.100.
BBC Brown, Boveri & Company Limited: *See—*
Buhler, Karl, 4,615,035, Cl. 373-72.000.
Vogel, Xaver, 4,614,227, Cl. 165-80.400.
Beatty, Charles W., Jr.: *See—*
King, James T.; and Beatty, Charles W., Jr., 4,615,007, Cl. 364-415.000.
Bechler, Eckhart: *See—*
Knoch, Heinrich; Schwetz, Karl A.; Lipp, Alfred; and Bechler, Eckhart, 4,614,724, Cl. 501-87.000.
Beck, Ulrich: *See—*
Sackmann, Gunter; Beck, Ulrich; and Baumgen, Heinz, 4,614,759, Cl. 524-549.000.
Schroer, Wolf-Dieter; Beck, Ulrich; Mummenhoff, Peter; and Baumgen, Heinz, 4,614,546, Cl. 106-213.000.
Becker, Reinhard, to Karl Becker GmbH & Co. KG. Depositioning single pieces of grain. 4,614,283, Cl. 221-278.000.
Becker, Reinhard: *See—*
Urbach, Hansjorg; Henning, Rainer; and Becker, Reinhard, 4,614,805, Cl. 548-427.000.
Beckering, Jacobus J.; Lehnerd, Alvin P.; and Zoberis, Walter B., to John Zink Company. Liquid heating and dispensing appliance. 4,614,859, Cl. 219-312.000.
Beckman Industrial Corporation: *See—*
Guercio, James; Meyer, Ronald A.; and Sakamoto, Shiro, 4,614,846, Cl. 200-5.00E.
Beckner, Mervyn J.: *See—*
Kiczek, Edward F.; Beckner, Mervyn J.; and Trimon, Emiliano, 4,614,490, Cl. 431-4.000.
Becton, Dickinson and Company: *See—*
Rathemacher, John W., 4,614,076, Cl. 53-433.000.
Bedell, John R., to Electric Power Research Institute. Vacuum belt hugger for casting of ribbon. 4,614,218, Cl. 164-253.000.
Beere, Richard F.; and Christensen, Harry N. Multiple collet workpiece holder. 4,614,469, Cl. 409-219.000.
Bekooij, Jurrianus; Kooijmans, Petrus G.; Raudenbusch, Werner T.; and Stachowiak, Stephen A., to Shell Oil Company. Preparation of binders for coatings, thermosetting coating compositions and their use. 4,614,775, Cl. 525-533.000.
Belko, Robert P.: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,614,831, Cl. 560-126.000.
Bellani, Piero; Clavenna, Gaetano; and Pellegrini, Rinaldo, to RBS Pharma (Roger Bellon Schoum) S.p.A. Use of fenpyramin as platelet-antiaggregating, vasodilating, antithrombotic and antianginous medicine. 4,614,744, Cl. 514-277.000.
Beloit Corporation: *See—*
Goldenberg, Philip H., 4,614,309, Cl. 241-163.000.
Bendig, Anna L., to Boeing Company, The. Method for forming a ceramic coating. 4,614,673, Cl. 427-376.200.
Bengochea, Fulgencio V.: *See—*
Price, Edison A.; and Bengochea, Fulgencio V., 4,614,072, Cl. 52-484.000.
Bensinger, William I., to Fred Hutchinson Cancer Research Center. Method and apparatus for treatment to remove immunoreactive substances from blood. 4,614,513, Cl. 604-6.000.
Bentley, Terence J.: *See—*
Asato, Goro; and Bentley, Terence J., 4,614,746, Cl. 514-524.000.
Beretta, Mario, to Arioli & C S.R.L. System for the continuous and open-width washing of a fabric. 4,614,096, Cl. 68-22.00R.
Berger, Richard M., to American Filtrona Corporation. Smoke filter having extended film overwrap and method and apparatus for fabricating same. 4,614,199, Cl. 131-362.000.
Bergkvist, Jorgen, to Asea Stal AB. Combustion chamber having beds located one above the other and a method of controlling it. 4,614,167, Cl. 122-4.00D.
Bergthold, Jerome M. Extruded door frame assembly. 4,614,068, Cl. 52-211.000.
Berndt, Gerhard; and Marnette, Werner, to Norddeutsche Affinerie Aktiengesellschaft. Method of continuous metallurgical processing of copper-lead matte. 4,614,541, Cl. 75-74.000.

Bertotti, Franco; Ferrari, Paolo; Foroni, Mario; and Garue, Sergio, to SGS-ATES Componenti Elettronici S.p.A. Controlled electronic switching device for the suppression of transients. 4,614,962, Cl. 357-38.000.

Berzsenyi, Pal: *See*—
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Betrieb des VEB Kombinat Wolle und Seide: *See*—
Fiedler, Gerhard; and Fritzsche, Werner, 4,614,044, Cl. 34-25.000.

Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, to ITT Industries, Inc. Windshield wiper speed control arrangement. 4,614,903, Cl. 318-443.000.

Bibby, Kenneth; and Ring, Frank R., Jr., to Applied Plastics Co., Inc. Method for forming multi-laminate core assembly. 4,614,022, Cl. 29-596.000.

Biehl, Johann: *See*—
Jurgens, Rainer; and Biehl, Johann, 4,614,232, Cl. 166-105.500.

Bielawa, Robert J.: *See*—
Carr, Kenneth L.; Regan, James F.; Bousquet, Gerald G.; and Bielawa, Robert J., 4,614,514, Cl. 604-113.000.

Bienstman, Luc A.; and Dobosch, Wlodimir J., to International Standard Electric Corporation. Telecommunication line circuit and associated polarity reversal circuit. 4,614,840, Cl. 179-7.10R.

Bierent, Walter: *See*—
Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, 4,614,903, Cl. 318-443.000.

Bieringer, Hermann: *See*—
Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,614,535, Cl. 71-92.000.

Billman, Joe L. Snap link type cartridge speed loading device. 4,614,053, Cl. 42-89.000.

Binglin, Chen; and Bopeng, Zhang. Cowper having no combustion shaft. 4,614,496, Cl. 432-214.000.

Binsack, Rudolf: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.

Bishop, William B.; Oftelie, David C.; and Selep, M. Victoria, to National Can Corporation. Glass ware reject system. 4,614,531, Cl. 65-158.000.

Bittler, Dieter: *See*—
Petzoldt, Karl; Wiechert, Rudolf; Laurent, Henry; Nickisch, Klaus; and Bittler, Dieter, 4,614,616, Cl. 540-4.000.

Black & Decker, Inc.: *See*—
Somers, Robert I., 4,614,037, Cl. 30-392.000.

Blackburn, Peggy A.: *See*—
Goel, Anil B.; Blackburn, Peggy A.; and Tufts, Timothy A., 4,614,786, Cl. 528-60.000.

Bloemer, Robert W.: *See*—
Hu, Kwok D.; and Bloemer, Robert W., 4,615,029, Cl. 370-89.000.

Blom, Eric D.; and Singer, Mark I., to Hansa Medical Products, Inc. Voice prosthesis device. 4,614,516, Cl. 623-9.000.

Blum, Dietmar, to Julius Blum Gesellschaft m.b.H. Drilling and mounting machine. 4,614,012, Cl. 29-33.00K.

Bluzer, Nathan, to Westinghouse Electric Corp. Focal plane array. 4,614,960, Cl. 357-24.000.

BOC Group, Inc., The: *See*—
Gruber, Arthur W., 4,614,529, Cl. 55-520.000.

Bocquet, Michel: *See*—
Pelletier, Jean L.; Moreau, Michel; and Bocquet, Michel, 4,614,115, Cl. 73-599.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain saturated ketones and organoleptic uses thereof. 4,614,610, Cl. 252-522.00R.

Boden, Richard M.: *See*—
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,614,831, Cl. 560-126.000.

Boebel, Manfred, to Richard Wolf GmbH. Applicator for uterine pessaries. 4,614,182, Cl. 128-130.000.

Boeing Company, The: *See*—
Allen, Larry D., 4,614,380, Cl. 299-41.000.
Bendig, Anna L., 4,614,673, Cl. 427-376.200.
Brandenberg, Werner M.; and Pistoresi, Denis J., 4,614,405, Cl. 350-286.000.
Gobel, Gerald W., 4,614,318, Cl. 244-3.210.
Jones, Everett E., 4,614,137, Cl. 82-205.000.
Loch, David M., 4,614,607, Cl. 252-142.000.
Marvin, David J.; and Darges, Walter F., 4,614,316, Cl. 244-1.00R.

Boge Kompressoren Otto Boge GmbH & Co. KG: *See*—
Riegler, Gerold, 4,614,484, Cl. 418-201.000.

Bohle, Werner, to Gewerkschaft Eisenhutte Westfalia. Overload protection system for planetary gear drive. 4,614,134, Cl. 74-768.000.

Boing, Manfred: *See*—
Schulte, Siegfried; and Boing, Manfred, 4,614,848, Cl. 200-61.850.

Bolle, Fred; Herronen, John R.; and Wright, Joseph M., to Tek-Matik, Inc. Die cart. 4,614,108, Cl. 72-446.000.

Bonci, Franco, to Ing. C. Olivetti & C., S.p.A. Data processing system with interrupt facilities. 4,615,019, Cl. 364-900.000.

Boncoeur, Marcel; Hansz, Bernard; and Lieven, Thierry, to Commissariat a l'Energie Atomique. Process for the production of porous products made from boron or boron compounds. 4,614,637, Cl. 419-2.000.

Bongers, Jozef J. M.; and van Geenen, Albert A., to Stamicarbon B.V. Anionic polymerization of lactam with alkaline earth metal compound catalyst, lactam compound activator and ester compound. 4,614,792, Cl. 528-318.000.

Boots, Robert T., to Vermeulen-Hollandia Octrooien II B.V. Locking member for an open roof construction for a vehicle. 4,614,009, Cl. 74-501.000.

Bopeng, Zhang: *See*—
Binglin, Chen; and Bopeng, Zhang, 4,614,496, Cl. 432-214.000.

Borg-Warner Chemicals, Inc.: *See*—
Valdiserri, Leo L., 4,614,756, Cl. 524-147.000.

Bortner, Allen A. Free standing insert with coupon flaps. 4,614,364, Cl. 283-45.000.

Borzym, Alexander, to Alpha Industries, Inc. Rotary link driven cutoff machine. 4,614,139, Cl. 83-300.000.

Boss, Heinz, to GRAPHA-HOLDING AG. Saddle stitching machine for signatures and the like. 4,614,290, Cl. 227-1.000.

Botka, Peter: *See*—
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Bottomley, Paul A.; and Glover, Gary H., to General Electric Company. Method for reduction of motion artifacts in Fourier transform NMR imaging techniques. 4,614,195, Cl. 128-653.000.

Boucher, Gilles, to Boucher, Gilles. Device for the remote control of the position of a mobile support. 4,614,943, Cl. 340-825.000.

Boulianne, Michel: *See*—
Arseneault, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., 4,614,499, Cl. 434-262.000.

Bousquet, Gerald G.: *See*—
Carr, Kenneth L.; Regan, James F.; Bousquet, Gerald G.; and Bielawa, Robert J., 4,614,514, Cl. 604-113.000.

Boykin, Richard C. Protective system for van and truck vent windows. 4,614,058, Cl. 49-56.000.

BP Chemicals Limited: *See*—
Drury, David J.; and Williams, Peter S., 4,614,816, Cl. 560-243.000.

Bracnik, Anthony S.: *See*—
Charlton, Keith D.; Bracnik, Anthony S.; and Forget, Kenneth M., 4,614,010, Cl. 24-639.000.

Braddon, David V.: *See*—
Schilling, Peter; and Braddon, David V., 4,614,600, Cl. 252-8.553.

Bradley, John J.; Stoffers, Brian L.; Staplin, Theodore R., Jr.; and Widen, Melinda A., to Honeywell Information Systems Inc. Apparatus for performing simplified decimal multiplication by stripping leading zeroes. 4,615,016, Cl. 364-756.000.

Bragagnini, Bruno. Portable apparatus for compacting and leveling a poured floor. 4,614,486, Cl. 425-62.000.

Braisted, Leon O., Jr., to General Motors Corporation. Turnbuckle clamp assembly with orientation washer. 4,614,451, Cl. 403-14.000.

Branch, Billye J.: *See*—
Hsiung, Du Y.; Branch, Billye J.; and Rathnam, Jayaseelan, 4,614,200, Cl. 132-7.000.

Brandenberg, Werner M.; and Pistoresi, Denis J., to Boeing Company, The. Wide angle laser window. 4,614,405, Cl. 350-286.000.

Brange, Jens J. V.: *See*—
Hansen, Philip E.; Brange, Jens J. V.; and Havelund, Svend, 4,614,730, Cl. 514-3.000.

Breen, Thomas J.; and Slowik, Sylvester H., to Rand McNally & Co. Tamper resisting machine readable negotiable instruments and method of making and using same. 4,614,362, Cl. 282-9.00R.

Breen, Thomas J., to Rand McNally & Co. Negative-image generating, tamper-resisting negotiable instruments. 4,614,363, Cl. 282-22.00R.

Breen, Thomas J., to Rand McNally & Co. Tamper-resisting multipart negotiable instruments. 4,614,367, Cl. 283-102.000.

Brettle, Jack; and Goosey, Martin T., to Plessey Overseas Limited. Plastics encapsulated electronic devices. 4,614,963, Cl. 357-72.000.

Bricheno, Terry: *See*—
Eales, Brian A.; Bricheno, Terry; Leggett, Norman D.; and Ashton, John E. U., 4,615,031, Cl. 372-36.000.

Bridgestone Tire Co., Ltd.: *See*—
Osawa, Toru; and Kitazawa, Yoichi, 4,614,215, Cl. 152-527.000.

Brill, Fred; and Spector, George. Spring biased clothes pin. 4,614,008, Cl. 24-501.000.

Britax (Wingard) Limited: *See*—
Else, Robert F., 4,614,007, Cl. 24-136.00K.

Broan Mfg. Co., Inc.: *See*—
Buckley, Norman A.; Butt, Roland E.; and Schlegel, Donald E., 4,614,177, Cl. 126-299.00R.

Brocke, Rolf, to Metzeler Kautschuk GmbH. Device for guiding and holding a window pane in a motor vehicle. 4,614,061, Cl. 49-440.000.

Broen Armatur A/S: *See*—
Hansen, Anders; and Jepsen, Bjarne, 4,614,329, Cl. 251-248.000.

Brooks, Robert B., to General Electric Company. Ice piece ejection mechanism for icemaker. 4,614,088, Cl. 62-137.000.

Brosch, Rudolf; Keinert, Joachim; Klink, Erich; and Wernicke, Friedrich C., to International Business Machines Corporation. Phase splitter with latch. 4,614,885, Cl. 307-513.000.

Brown, Robert C.; and Gomez, William. Firearm magazine and magazine loader. 4,614,052, Cl. 42-87.000.

Browne, Mark A.: *See*—
Green, Robert G.; Browne, Mark A.; Deloughry, Richard J.; and Hill, Eric J., 4,614,100, Cl. 72-53.000.

Bru, Jean. Process for manufacturing effervescent granules and tablets. 4,614,648, Cl. 424-44.000.

Bruning, Paul: *See—*
Zettler, Karl-Heinz; Bruning, Paul; Schmidt, Reinhard; and Hemfort, Heinrich, 4,614,598, Cl. 210-781.000.
Brunius, Robert E.; and Nelson, Jon R., to Diversified Energies, Inc. Automatic/remote RF instrument reading method and apparatus. 4,614,945, Cl. 340-870.030.
Brunninger, Manfred: *See—*
Theurer, Josef; and Brunninger, Manfred, 4,614,238, Cl. 171-16.000.
Brunswick Corporation: *See—*
Hofmann, Frieder, 4,614,109, Cl. 73-38.000.
Brunt, William H.; and Wilson, Christopher J., to Pilkington Brothers P.L.C. Mixer for mixing fibres into a slurry. 4,614,439, Cl. 366-154.000.
BTR plc: *See—*
Green, Robert G.; Browne, Mark A.; Deloughry, Richard J.; and Hill, Eric J., 4,614,100, Cl. 72-53.000.
Bucher - Guyer AG: *See—*
Wymann, Markus, 4,614,358, Cl. 280-689.000.
Buckeye International, Inc.: *See—*
Ferguson, Donald E., 4,614,014, Cl. 29-157.10R.
Buckley, Norman A.; Butt, Roland E.; and Schlegel, Donald E., to Broan Mfg. Co., Inc. Multi feature range hood. 4,614,177, Cl. 126-299.00R.
Buckley, Thomas F., to Chevron Research Company. Fuel compositions containing modified succinimides (VI). 4,614,522, Cl. 44-63.000.
Budzol, Melvin: *See—*
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,614,310, Cl. 241-259.200.
Buehler, John D., to Dougherty Brothers Company. Mixing container and adapter. 4,614,437, Cl. 366-130.000.
Buhler, Karl, to BBC Brown, Boveri & Company Limited. Bottom electrode arrangement for an electric furnace. 4,615,035, Cl. 373-72.000.
Bull, Michael J.: *See—*
Fortin, Paul E.; and Bull, Michael J., 4,614,552, Cl. 148-417.000.
Bunch, Floyd G. Utility carrier. 4,614,350, Cl. 280-47.240.
Burroughs Corporation: *See—*
Logadon, Gary L.; and Scheevel, Mark R., 4,615,003, Cl. 364-200.000.
Burstell, Helmut: *See—*
Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,614,535, Cl. 71-92.000.
Bussell, Roland E., to Dow Chemical Company, The. Impressed current anode bed. 4,614,574, Cl. 204-196.000.
Butt, Roland E.: *See—*
Buckley, Norman A.; Butt, Roland E.; and Schlegel, Donald E., 4,614,177, Cl. 126-299.00R.
Buzby, George C., Jr.; Winkley, Michael W.; and McCaully, Ronald J., to American Home Products Corporation. Process for the asymmetric synthesis of chiral indoline-2-carboxylic acids. 4,614,806, Cl. 548-491.000.
BXL Plastics Limited: *See—*
Nicholas, Donald C.; and Smith, Gordon C. R., 4,614,011, Cl. 26-73.000.
Cadillac Rubber & Plastics, Inc.: *See—*
Hines, John R.; Monroe, Raymond J.; and Ruppel, Danny R., 4,614,444, Cl. 384-138.000.
Cambridge Instruments Limited: *See—*
Sloman, Anthony W., 4,614,872, Cl. 250-396.00R.
Cameron, Lawrence E.; and Stouffs, Robert H. M., to CPC International Inc. Chromatographic separation of dextrose from starch hydrolysate. 4,614,548, Cl. 127-40.000.
Camp, Douglas R.: *See—*
Schimmel, Karl F.; Prucnal, Paul J.; Camp, Douglas R.; and Tiedt, John W., 4,614,766, Cl. 525-104.000.
Campitelli, Antonio, to Sea Dupar S.R.L. Automatic and autonomous floating purifier with rotary belt separation and external radial circulation. 4,614,582, Cl. 210-242.300.
Canadian Fram Limited: *See—*
Hansen, Kent G., 4,614,184, Cl. 123-571.000.
Canadian Liquid Air Ltd.: *See—*
Savard, Guy; and Lee, Robert, 4,614,216, Cl. 164-67.100.
Canon Kabushiki Kaisha: *See—*
Hotta, Yoshio, 4,614,407, Cl. 350-339.00R.
Ishizaki, Akira; Kawabata, Takashi; and Matsumura, Susumu, 4,614,418, Cl. 354-407.000.
Ito, Yoshio, 4,614,950, Cl. 346-76.0PH.
Ogata, Minoru, 4,614,976, Cl. 358-257.000.
Osato, Yoichi; Saito, Ichiro; and Takasu, Yoshio, 4,614,951, Cl. 346-135.100.
Sayanagi, Kazuo, 4,614,967, Cl. 358-75.000.
Suzuki, Toyotosi; and Nagata, Toru, 4,614,416, Cl. 354-400.000.
Tezuka, Nobuo, 4,614,984, Cl. 360-75.000.
Toyama, Masamichi, 4,614,974, Cl. 358-227.000.
Capdeboscq, Bernard, to S. A. Martin. Sheet folding machine. 4,614,512, Cl. 493-441.000.
Cappellina, Giuseppe, to Ruaro S.p.A. Telescopic tap for the tanks of automatic liquid-filling machines. 4,614,214, Cl. 141-288.000.
Cargill, Incorporated: *See—*
Kakade, Madhu, 4,614,653, Cl. 426-2.000.
Carinalli, Charles P.: *See—*
Li, Gabriel M. Y.; Carinalli, Charles P.; and Balakrishnan, Ramanatha V., 4,615,039, Cl. 375-36.000.
Carl Freudenberg, Firma: *See—*
Bauder, Kurt, 4,614,371, Cl. 285-231.000.
Carl Still GmbH & Co. KG, Firma: *See—*
Stahlherm, Dieter; Haack, Reimer; Stewen, Wilhelm; and Lukaszewicz, Helmut, 4,614,567, Cl. 201-1.000.
Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Horenz, Peter G., 4,614,411, Cl. 350-516.000.
Caron, Bernard G.; and Cooper, Ronald F., to AMP Incorporated. Fiber optic connector and method of terminating fiber optic transmission members. 4,614,402, Cl. 350-96.210.
Carpano & Pons: *See—*
Saligny, Yves, 4,614,396, Cl. 339-97.00P.
Carpenter, Charles L.; Carter, Jerry L.; and McElwee, Terry D., to Axia Incorporated. Ground connector for microelectronic circuit case. 4,614,836, Cl. 174-51.000.
Carr, Kenneth L.; Regan, James F.; Bousquet, Gerald G.; and Bielawa, Robert J., to M/A Com, Inc. Microwave sterilizer. 4,614,514, Cl. 604-113.000.
Carrier Corporation: *See—*
Flanigan, Paul J., 4,614,397, Cl. 339-132.00B.
Carson, Kent R.; Luttmer, Joseph D.; Williams, Charles E.; McKee, William R.; Tso, Stephen T.; and Johnson, Elwin L., to Texas Instruments Incorporated. Photovoltaic solar arrays using silicon microparticles. 4,614,835, Cl. 136-250.000.
Carter, Jerry L.: *See—*
Carpenter, Charles L.; Carter, Jerry L.; and McElwee, Terry D., 4,614,836, Cl. 174-51.000.
Carter, Scott K.: *See—*
Mendenhall, George A.; and Carter, Scott K., 4,614,141, Cl. 83-402.000.
Casio Computer Co., Ltd.: *See—*
Endo, Akinori; Shimanari, Tatsumi; and Watanabe, Shunji, 4,614,424, Cl. 355-56.000.
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,614,954, Cl. 346-160.000.
Takano, Akira; Mizuno, Yutaka; Ishikawa, Hiroyuki; and Honjo, Yoshiaki, 4,614,384, Cl. 312-281.000.
Usami, Ryuuzi, 4,614,983, Cl. 360-4.000.
Usui, Minoru, 4,615,024, Cl. 369-59.000.
Casio Electronic, Mfg. Co. Ltd.: *See—*
Endo, Akinori; Shimanari, Tatsumi; and Watanabe, Shunji, 4,614,424, Cl. 355-56.000.
Casio Electronics Mfg. Co. Ltd.: *See—*
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,614,954, Cl. 346-160.000.
Castillo, David D. Horizontal force exercise apparatus. 4,614,338, Cl. 272-117.000.
Caterpillar Inc.: *See—*
Nerstad, Karl A.; and Windish, Willis E., 4,614,133, Cl. 74-740.000.
Caterpillar Industrial Inc.: *See—*
Alster, Louis G., 4,614,868, Cl. 250-227.000.
Cattani, Alberto, to COMAU S.p.A. System for the bidirectional location and locking of mobile members in a repetitive position. 4,614,456, Cl. 403-322.000.
CDM Connectors Development & Mftg. AG: *See—*
Tesch, Hans-Jurgen, 4,614,400, Cl. 339-220.00R.
CEFIN S.p.A.: *See—*
Pazzaglia, Luigi, 4,614,293, Cl. 228-17.000.
Centre National de la Recherche Scientifique (C.N.R.S.): *See—*
Clot, Jean; and Falipou, Jean, 4,614,084, Cl. 60-325.000.
Century Electric, Inc.: *See—*
Sisk, Hollis D., 4,614,023, Cl. 29-598.000.
Cervantes, Moses. Foldable bicycle cart. 4,614,352, Cl. 280-204.000.
Chalmers, Alexander J.: *See—*
Wilson, James E.; and Chalmers, Alexander J., 4,614,658, Cl. 426-103.000.
Champion International Corporation: *See—*
Smith, Albert C.; and Owen, Dennis W., 4,614,555, Cl. 156-64.000.
Chan, Wan-kit: *See—*
Loev, Bernard; Jones, Howard; and Chan, Wan-kit, 4,614,747, Cl. 514-529.000.
Charlton, Keith D.; Bracnik, Anthony S.; and Forget, Kenneth M., to TRW Inc. Safety belt buckle. 4,614,010, Cl. 24-639.000.
Chase, Al L.; and Chase, Ursula H. Folding child support. 4,613,996, Cl. 5-2.00R.
Chase, Ursula H.: *See—*
Chase, Al L.; and Chase, Ursula H., 4,613,996, Cl. 5-2.00R.
Chavdarian, Charles G.: *See—*
Kraatz, Gary W.; Chavdarian, Charles G.; and Heusinkveld, Valerie F., 4,614,828, Cl. 558-203.000.
Chavin, Stephen I.; and Fay, Philip J., to University of Rochester. Deglycosylated Human Factor VIII:C. 4,614,795, Cl. 530-383.000.
Chelin, Cesare, to Ing. C. Olivetti & C., S.p.A. Device for connecting a logic circuit to a coaxial cable. 4,614,394, Cl. 339-97.00P.
Chen, Lish-Yann: *See—*
Yan, Johnson K.; Szabo, Nicholas S.; and Chen, Lish-Yann, 4,615,013, Cl. 364-521.000.
Chen, Steve Y. Nail clipper. 4,614,031, Cl. 30-28.000.
Cheng, Chia C.: *See—*
Zee-Cheng, Robert K.; and Cheng, Chia C., 4,614,820, Cl. 544-126.000.
Cherne Industries, Inc.: *See—*
Mathison, Allen D.; and Nelson, Dale K., 4,614,206, Cl. 138-93.000.
Cherry, James H., to Weyerhaeuser Company. Octagonal bulk bin. 4,614,298, Cl. 229-109.000.
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., to Mobil Oil Corporation. Octane and total yield improvement in catalytic cracking. 4,614,578, Cl. 208-120.000.

Chevillat, Pierre R.; Kaeser, Hans P.; Maiwald, Dietrich G. U.; and Ungerboeck, Gottfried, to International Business Machines Corporation. Microprocessor including means for concurrently copying ALU results into selected operand register subsets and at least one main memory locations. 4,615,004, Cl. 364-200.000.

Chevron Research Company: *See*—
Buckley, Thomas F., 4,614,522, Cl. 44-63.000.
Current, Steven P., 4,614,832, Cl. 560-204.000.
Strickland, Gordon E., Jr., 4,614,118, Cl. 73-701.000.
Wollenberg, Robert H., 4,614,603, Cl. 252-51.50A.

Chibana, Masanobu, to Nippon Gakki Seizo Kabushiki Kaisha. Operating member control device of electronic musical instrument. 4,614,145, Cl. 84-345.000.

Chipkin, Richard E.; and Witkowski, Joseph T., to Schering Corporation. Methods of treating pain and inflammation with 4,7-dimethyl-2-(4-pyridinyl)-1,2,4,-triazolo[1,5-a]pyrimidin-5(4H)-one or the pharmaceutically acceptable salts or solvates thereof. 4,614,743, Cl. 514-258.000.

Chisso Corporation: *See*—
Inoue, Hiromichi; Saito, Shinichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, 4,614,609, Cl. 252-299.660.

Chlebina, Lawrence E.; Portalupi, Steven J.; and Smith, Michael W., to Goodyear Tire & Rubber Company, The. Bead transporting container. 4,614,268, Cl. 206-304.000.

Chonde, Yohannes, to Dow Chemical Company, The. Process for preparing improved weak acid resins and porous weak acid resins. 4,614,751, Cl. 521-31.000.

Christensen, Harry N. Adjustable jig for hole formation. 4,614,464, Cl. 408-104.000.

Christensen, Harry N.: *See*—
Beere, Richard F.; and Christensen, Harry N., 4,614,469, Cl. 409-219.000.

Christensen, Lawrence E.: *See*—
Adrian, Donald J.; Christensen, Lawrence E.; and Hanselman, James C., 4,614,918, Cl. 332-16.00R.

Christensen, Michael S.: *See*—
Lauchner, John K.; Christensen, Michael S.; and Alonge, Paul J., 4,614,878, Cl. 307-106.000.

Christiansen, Steven H., to Dow Chemical Company, The. Stabilization of peroxide systems in the presence of alkaline earth metal ions. 4,614,646, Cl. 423-272.000.

Christman, Donald L., to BASF Corporation. Rigid polyurethane foams with constant or slightly decreasing strain with an increasing stress in compression. 4,614,754, Cl. 521-167.000.

Chuang, Patrick T.: *See*—
Rinerson, Darrell D.; and Chuang, Patrick T., 4,615,020, Cl. 365-184.000.

Ciba Geigy Corporation: *See*—
Deitz, Rolf; and Seiler, Herbert, 4,614,818, Cl. 534-598.000.
Ernest, Ivan; Kalvoda, Jaroslav; and Frostl, Wolfgang, 4,614,614, Cl. 540-359.000.
Ilvespaa, Atso; and Haas, Georges, 4,614,745, Cl. 514-432.000.
Lauterbach, Horst, 4,614,674, Cl. 427-386.000.

Cibie Projecteurs: *See*—
Montet, Maurice, 4,614,997, Cl. 362-382.000.

Cicognani, Mario: *See*—
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,614,509, Cl. 474-205.000.

CKD Corporation: *See*—
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.

Clarion Co., Ltd.: *See*—
Sukenari, Akira; Hasegawa, Isao; and Ito, Yukio, 4,614,987, Cl. 360-93.000.

Claussen, Uwe: *See*—
Weber, Hans-Leo; Claussen, Uwe; and Hannes, Hellmut, 4,614,634, Cl. 264-341.000.

Clavenna, Gaetano: *See*—
Bellani, Piero; Clavenna, Gaetano; and Pellegrini, Rinaldo, 4,614,744, Cl. 514-277.000.

Claypro U.S.A.: *See*—
Stuart, Frank A.; and Tyson, William H., Jr., 4,614,597, Cl. 210-772.000.

Clot, Jean; and Falipou, Jean, to Centre National de la Recherche Scientifique (C.N.R.S.). Link device with a plurality of freedom degrees. 4,614,084, Cl. 60-325.000.

Cloutier, Louis: *See*—
Arseneault, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., 4,614,499, Cl. 434-262.000.

Clupper, Charles B.; and Mathews, Robert J., to U.S. Computer Systems. Descrambler apparatus. 4,614,970, Cl. 358-120.000.

Codina Puigmarti, Jose M.: *See*—
Matas, Ricardo D.; Codina Puigmarti, Jose M.; Repolles, Jose M.; and Sera, Jorge S., 4,614,833, Cl. 546-314.000.

Coenco Ltd.: *See*—
Mojoli, Luigi F.; and Olivieri, Angelo F., 4,615,040, Cl. 375-40.000.

Cognigni, Franco; and Mariano, Armando, to Anic S.p.A. Process for producing diesterdiamides. 4,614,815, Cl. 560-88.000.

Cohen, Stephen R. Mounting arrangement for a vehicle rear view mirror having universally manipulable joints. 4,614,412, Cl. 350-632.000.

Coke, Harry E.; and Gill, Gary W., to Southwest Techni-Systems, Inc. Synthetic running surface. 4,614,686, Cl. 428-327.000.

Colle, Edward A., Jr.; George, Flint R.; and Yates, Donald N., Jr., to Halliburton Company. Pressure responsive explosion initiator with time delay and method of use. 4,614,156, Cl. 102-312.000.

Colodner, Jesse L.; and Ebner, Edwin D. Combination exhaust gas fire extinguisher and blower machine. 4,614,237, Cl. 169-12.000.

Colombo, Edward A.; Kwack, Tae H.; and Su, Tien-Kuei, to Mobil Oil Corporation. Linear low density ethylene polymers blended with modified linear low density ethylene polymers. 4,614,764, Cl. 525-72.000.

Com Dev Ltd.: *See*—
Tong, Robert S. K., 4,614,920, Cl. 333-135.000.

COMAU S.p.A.: *See*—
Cattani, Alberto, 4,614,456, Cl. 403-322.000.

Commissariat a l'Energie Atomique: *See*—
Boncoeur, Marcel; Hansz, Bernard; and Lieven, Thierry, 4,614,637, Cl. 419-2.000.
Poujois, Robert, 4,614,937, Cl. 340-365.00C.

Conlon, Peter, to Conlon, Peter. Telephone hookswitch flasher. 4,614,845, Cl. 179-159.000.

Cook, Benjamin H.: *See*—
von Gunten, Marc K.; Cook, Benjamin H.; and Gerstenberger, David C., 4,615,034, Cl. 372-99.000.

Cooper, Ronald F.: *See*—
Caron, Bernard G.; and Cooper, Ronald F., 4,614,402, Cl. 350-96.210.

Copeland, Harry J.; and Powers, John W., to Western Litho Plate & Supply Co. Photographic printing method and apparatus. 4,614,425, Cl. 355-99.000.

Coral, Inc.: *See*—
Azzarella, Michael; and Luth, Frederick L., 4,614,595, Cl. 210-754.000.

Cordis Corporation: *See*—
Jones, W. Kinzy; and Weinberg, Alvin H., 4,614,194, Cl. 128-419.00P.
Peers-Trevarton, Charles A., 4,614,395, Cl. 339-97.00R.
Topp, Mark; and Hadden, Sam, 4,614,668, Cl. 427-66.000.

Cormier, William E., Jr.: *See*—
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,614,578, Cl. 208-120.000.

Corriveau, Christine L.: *See*—
Ream, Ronald L.; Moore, David M.; and Corriveau, Christine L., 4,614,654, Cl. 426-5.000.

Couch, Robert P.: *See*—
Rosenbush, David M.; and Couch, Robert P., 4,615,008, Cl. 364-431.020.

Couilahn, John F., to General Dynamics Corp./Convair Division. Liquid metal pipe joint. 4,614,368, Cl. 285-10.000.

Coulmance, Jean-Pierre, to U.S. Philips Corporation. Arrangement for opening the loop for a well-defined time interval from a telephone set. 4,614,843, Cl. 179-81.00R.

Coulter, Leland E., to Teledyne, Inc. Rolling mill. 4,614,099, Cl. 72-29.000.

Courvoisier, Guy: *See*—
Arieh, Simon; and Courvoisier, Guy, 4,614,047, Cl. 36-50.000.

Covington, Wayne F.: *See*—
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.

CPC International Inc.: *See*—
Cameron, Lawrence E.; and Stouffs, Robert H. M., 4,614,548, Cl. 127-40.000.

Craig, Evan L.: *See*—
Katerberg, James A.; Craig, Evan L.; and Huliba, David A., 4,614,948, Cl. 346-75.000.

Crawford, Janet E.; Epstein, Ronald A.; and Triplett, Kelly B., to Stauffer Chemical Company. Supported organometallic compounds for utilization in purification of fluids. 4,614,729, Cl. 502-401.000.

Cristol, Benoit; and Mordini, Jacques, to Aluminum Pechiney. Method of producing an aluminium trihydroxide with a large, even particle size. 4,614,642, Cl. 423-127.000.

Crivaro, Roger P.; McHenry, Ronald G.; and McHenry, Ronald M. Apparatus for finishing surfaces. 4,614,063, Cl. 51-174.000.

Crosby Group, Inc., The: *See*—
Wilson, Earl E., 4,614,332, Cl. 254-405.000.

Crover, Stephen E., to Stanley Works, The. Impact tool assembly with bit isolating means. 4,614,241, Cl. 173-139.000.

Csapo, John S.: *See*—
Smith, Louis W.; and Csapo, John S., 4,614,842, Cl. 179-27.0FH.

Csiki, Kalman, to Gullfiber AB. Ear plug as well as a method and apparatus for the production thereof. 4,614,487, Cl. 425-112.000.

Curlett, John, to Fort Dodge Chemical Company. Pelletized material depositing tool. 4,614,160, Cl. 111-96.000.

Current, Steven P., to Chevron Research Company. Dialkyl oxalates from carbon monoxide and an alcohol. 4,614,832, Cl. 560-204.000.

Curtis, Michael E.; and Haines, Robert C., to Dunlop Limited. Method of injection molding a thermoplastic hollow or hollow foam filled one piece head of a golf club. 4,614,627, Cl. 264-46.600.

Czibula, Laszlo : *See*—
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.

D.D. Williamson & Co., Inc.: *See*—
Ramaswamy, Setlur R., 4,614,662, Cl. 426-540.000.

Dabbieri, Claudai L. 9/1 necktie. 4,613,992, Cl. 2-144.000.

Daghe, Joseph L.; and Sands, Robert E., to Mueller Co. Water meter service installation. 4,614,113, Cl. 73-201.000.

Dai-Ichio Kogyo Seiyaku Co., Ltd.: *See*—
Seino, Hajime; Uchibori, Tsuyoshi; Inamasu, Sachiko; and Nishitani, Toshiyuki, 4,614,718, Cl. 435-72.000.

Daido Concrete Kogyo Kabushiki Kaisha: *See*—
Itou, Yoshitaka, 4,614,462, Cl. 405-232.000.

Daido Tokushuko Kabushiki Kaisha: *See*—
Sugiura, Saburo; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,614,159, Cl. 110-261.000.

Daikin Industries: *See*—
Ihara, Kiyohiko; and Nakagawa, Tsuneo, 4,614,276, Cl. 215-364.000.

Daimer, Wolfgang; Gmoser, Johann; and Schipfer, Rudolf, to Vianova Kunstharz, A.G. Self-crosslinking cathodically depositable ed-binders containing modified phenol novolaks. 4,614,783, Cl. 525-504.000.

Dainippon Screen Manufacturing Co., Ltd.: *See*—
Henmi, Kojiro; and Miyasaka, Eiji, 4,614,334, Cl. 271-8.100.

Damon Biotech, Inc.: *See*—
Jarvis, Allan P., Jr.; and Kosowsky, David I., 4,614,651, Cl. 424-85.000.

Danfoss A/S: *See*—
Hansen, Henning M.; Jacobsen, Hans E.; Lassithiotakis, Konstantin; and Nyrup, John, 4,614,121, Cl. 73-861.120.
Valbjorn, Knud V.; and Meldgaard, Poul O., 4,614,327, Cl. 251-129.160.

Daniele, Joseph J.; and Banton, Martin E., to Xerox Corporation. Microdeflector probe for electrostatic voltmeters. 4,614,908, Cl. 324-458.000.

Danly Machine Corporation: *See*—
Glasberg, Lucian, 4,614,265, Cl. 198-774.000.

Darges, Walter F.: *See*—
Marvin, David J.; and Darges, Walter F., 4,614,316, Cl. 244-1.00R.

Darton, Kenneth S.; and Larsen, Johnathan P., to Standard Telephones and Cables Public Limited Company. Magnetic angular position sensor. 4,614,041, Cl. 33-313.000.

Dassler, Armin A., to PUMA-Sportschuhfabriken Rudolf Dassler KG. Shoe sole having a midsole consisting of several layers. 4,614,046, Cl. 36-30.00R.

Data Ray Corporation: *See*—
Webb, Richard C.; and Webb, James R., 4,614,899, Cl. 315-411.000.

Daugny, Daniel, to Societe Financiere & Immobiliere SKF et Cie. Process for screw-cutting in a tube or link made from a composite carbon fiber based material coated with polymerized resin. 4,614,631, Cl. 264-258.000.

Davis, Bayard C., to XCO International, Inc. Method of manufacturing heat sensitive cable. 4,614,024, Cl. 29-612.000.

Davis, Doyle: *See*—
Takashima, Yoshiyuki, 4,614,342, Cl. 273-85.0CP.

Davis, James W.; and Jones, Frank D., to International Business Machines Corporation. Field effect transistor (FET) cascode current switch (FCCS). 4,615,010, Cl. 364-491.000.

Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., to Federal Paper Board Co., Inc. Tamper resistant carton. 4,614,297, Cl. 229-132.000.

Day, Robert E. Apparatus for conducting a liquid to each of a plurality of trunked plants. 4,614,055, Cl. 47-2.000.

Day, Wayne T.: *See*—
Hawkins, Hugh M., 4,614,251, Cl. 182-63.000.

De La Rue Systems Limited: *See*—
Lane, Martin, 4,614,867, Cl. 250-223.00R.

Dean, Barry D., to Atlantic Richfield Company. Molding composition containing functionalized thermoplastic rubber and method. 4,614,765, Cl. 525-93.000.

Dean, Barry D., to Atlantic Richfield Company. Moldable polyestersulfone thermoplastic resin. 4,614,767, Cl. 525-150.000.

Dean, Barry D., to Atlantic Richfield Company. Polymerization initiator. 4,614,776, Cl. 526-204.000.

Debaes, Johnny, to N. V. Michel Van De Wiele. Leno device for weaving machines and weaving machines equipped with such a leno device. 4,614,210, Cl. 139-54.000.

Debely, Pierre-Etienne: *See*—
Duruz, Jean J.; Derivaz, Jean-Pierre; Debely, Pierre-Etienne; and Adorian, Iudita L., 4,614,569, Cl. 204-67.000.

Deere & Company: *See*—
Weber, Jerry L.; and Yarbrough, Don L., 4,614,197, Cl. 130-27.00R.

De Gasperis, Paolo: *See*—
Roveda, Riccardo; Di Gregorio, Carlo; De Gasperis, Paolo; and Miccoli, Giuseppe, 4,614,923, Cl. 333-147.000.

Deitz, Rolf; and Seiler, Herbert, to Ciba Geigy Corporation. Process for the preparation of amino-fluoro-s-triazine dyes by reaction of cyanuric fluoride with an amino dye and an amide in one operation. 4,614,818, Cl. 534-598.000.

DeJesus, Armando L.: *See*—
Sood, Lal C.; Golab, James S.; and DeJesus, Armando L., 4,614,883, Cl. 307-449.000.

Del Monte Corporation: *See*—
Liu, Yuan K., 4,614,659, Cl. 426-321.000.

Delevallee, Francoise; Deraedt, Roger; and Jouquey, Simone, to Roussel Uclaf. Novel anti-inflammatory treatment. 4,614,736, Cl. 514-179.000.

Dell, Hans-Dieter; Pelster, Bernhard; Kraus, Reinhold; and Schierstedt, Detlef, to Troponwerke GmbH & Co., KG. Depot antiinflammatory agents. 4,614,741, Cl. 514-222.000.

Deloughry, Richard J.: *See*—
Green, Robert G.; Browne, Mark A.; Deloughry, Richard J.; and Hill, Eric J., 4,614,100, Cl. 72-53.000.

Del Pino, Herman D. Roll paper holder. 4,614,312, Cl. 242-55.200.

Delta Vas-, Muanyag- ES Szolgaltato Ipari Szovetkezet: *See*—
Valyi, Gabriella; and Kutassy, Eva, 4,614,652, Cl. 424-195.100.

Demny, Florian C.: *See*—
Stewart, Thomas L.; and Demny, Florian C., 4,614,594, Cl. 210-746.000.

Dempsey, Donald J.: *See*—
Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., 4,614,787, Cl. 528-75.000.

Demukai, Noboru: *See*—
Sugiura, Saburo; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,614,159, Cl. 110-261.000.

Deraedt, Roger: *See*—
Delevallee, Francoise; Deraedt, Roger; and Jouquey, Simone, 4,614,736, Cl. 514-179.000.

Derivaz, Jean-Pierre: *See*—
Duruz, Jean J.; Derivaz, Jean-Pierre; Debely, Pierre-Etienne; and Adorian, Iudita L., 4,614,569, Cl. 204-67.000.

Desai, Pravin: *See*—
Ryan, Philip J.; and Desai, Pravin, 4,614,162, Cl. 118-19.000.

Dettloff, Marvin L.; Steele, Dennis L.; and Whiteside, Ross C., Jr., to Dow Chemical Company, The. Thermosettable epoxy resin composition. 4,614,788, Cl. 528-91.000.

Deutsche Automobilgesellschaft, mbH: *See*—
Klink, Rainer; and German, Johann, 4,614,260, Cl. 192-105.0CE.

Deutsche Thomson Brandt GmbH: *See*—
Rilly, Gerard, 4,614,998, Cl. 363-16.000.

Deutschmann, Herbert, to MTU Friedrichshafen GmbH. Built-up piston. 4,614,150, Cl. 92-221.000.

Dicke, Hans-Rudolf; and Kauth, Hermann, to Bayer Aktiengesellschaft. Thermotropic aromatic polyesters with high rigidity, a process for the production thereof and the use thereof for the production of mouldings, filaments, fibres and films. 4,614,789, Cl. 528-128.000.

Di Duca, Mark B. Distributor box for septic tank systems. 4,614,584, Cl. 210-422.000.

Dietsche, Wolfram: *See*—
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,614,604, Cl. 252-56.00S.

Dietze, Herbert; Huebner, Dietmar; Wagner, Friedhelm; Duebon, Manfred; and Wenz, Gerd, to BASF Aktiengesellschaft. Packaging container for a tape reel device e.g. a tape cassette. 4,614,269, Cl. 206-387.000.

Digital Equipment Corporation: *See*—
Parker, Wayne C.; and May, John W., 4,614,882, Cl. 307-443.000.

Di Gregorio, Carlo: *See*—
Roveda, Riccardo; Di Gregorio, Carlo; De Gasperis, Paolo; and Miccoli, Giuseppe, 4,614,923, Cl. 333-147.000.

Director-General of Agency of Industrial Science & Technology: *See*—
Masuda, Hitoshi; Takada, Koichi; and Nakata, Yoshiro, 4,614,586, Cl. 210-500.280.

Diversified Energies, Inc.: *See*—
Brunius, Robert E.; and Nelson, Jon R., 4,614,945, Cl. 340-870.030.

Doane, Elliott P., to Stauffer Chemical Company. Process for treating liquid chlorinated hydrocarbon wastes containing iron. 4,614,643, Cl. 423-140.000.

Dobosch, Wlodimir J.: *See*—
Bienstman, Luc A.; and Dobosch, Wlodimir J., 4,614,840, Cl. 179-7.10R.

Doggett, Lawrence A., to KitchenAid, Inc. Pivoting protector for food processor feed tube. 4,614,306, Cl. 241-37.500.

Dohar, Istvan: *See*—
Rajkai, Gabor; Szabo, Rozalia; Dohar, Istvan; Vinkovits, Sandor; Hetei, Marta; and Florian, Gyorgy, 4,615,027, Cl. 364-726.000.

Dolejs, Charles A., to UOP Inc. Rotary valve for interconnecting conduits in three groups. 4,614,204, Cl. 137-625.110.

Dorffel, Jorg: *See*—
Olbrich, Jurgen; and Dorffel, Jorg, 4,614,808, Cl. 549-236.000.

Dorph, Thor. Hydraulically operated different density particle sorting process. 4,614,579, Cl. 209-18.000.

Dorr-Oliver Incorporated: *See*—
Li, Alan Y., 4,614,588, Cl. 210-603.000.

Dorsey, James M., to General Services Engineering, Inc. Controlled refrigeration system. 4,614,089, Cl. 62-158.000.

Doster, Wolfgang; Kresser, Anton; and Schurmann, Jurgen, to Licentia Patent-Verwaltungs-GmbH. Office communications system. 4,614,978, Cl. 358-263.000.

Dougherty Brothers Company: *See*—
Buehler, John D., 4,614,437, Cl. 366-130.000.

Doughty, Steven P. Automatic resetting target. 4,614,345, Cl. 273-381.000.

Douta, Kikuo: *See*—
Matsuzawa, Toshiharu; Iwayanagi, Takao; Douta, Kikuo; Yanazawa, Hiroshi; Kohashi, Takahiro; and Nonogaki, Saburo, 4,614,706, Cl. 430-313.000.

Dow Chemical Company, The: *See*—
Bussell, Roland E., 4,614,574, Cl. 204-196.000.
Chonde, Yohannes, 4,614,751, Cl. 521-31.000.
Christiansen, Steven H., 4,614,646, Cl. 423-272.000.
Dettloff, Marvin L.; Steele, Dennis L.; and Whiteside, Ross C., Jr., 4,614,788, Cl. 528-91.000.
Hess, Roland H. P., 4,614,545, Cl. 106-169.000.

Holbrook, Michael T.; and Morris, Thomas E., 4,614,572, Cl. 204-157.950.
Lampton, Robert D., Jr.; and Hopkins, Thomas M., II, 4,614,644, Cl. 423-226.000.
Lo, Grace Y., 4,614,768, Cl. 525-250.000.

Dow Corning Corporation: *See—*
Homan, Gary R.; and Lee, Chi-Long, 4,614,760, Cl. 524-860.000.

Dowell Schlumberger Incorporated: *See—*
McIntire, William R., 4,614,435, Cl. 366-40.000.

Drabik, Thomas D.: *See—*
Miller, Larry D.; and Drabik, Thomas D., 4,614,375, Cl. 296-97.00G.

Draftex Industries, Limited: *See—*
Kruschwitz, Werner, 4,614,347, Cl. 277-184.000.

Draper Corporation: *See—*
Olenwine, Ronald G., 4,614,212, Cl. 139-79.000.

Dreckmann, Karl; and Muller, Wolfgang, to Lemo M. Lehmacher & Sohn GmbH Maschinenfabrik. Apparatus for the manipulation of plastic bags. 4,614,472, Cl. 414-27.000.

Dreschmann, Peter; Walter, Wilhelm; Scharting, Gunter; and Neugebauer, Steffen, to FAG Kugelfischer Georg Schafer (KGaA). Fastening device for the rollers of a roller bushing. 4,614,446, Cl. 384-484.000.

Drexhage, Gerrit K. Variable height pivot connector for convertible furniture. 4,613,998, Cl. 5-136.000.

Drexler, Kim E. Solar sail. 4,614,319, Cl. 244-172.000.

Driller, Hubert; and Mang, Paul, to Mania Elektronik Automatisation Entwicklung und Geratebau GmbH. Adaptor for changing the pitch of a contact array used with a printed circuit board testing apparatus. 4,614,386, Cl. 339-17.00M.

Driscoll, John N. Photodiode. 4,614,871, Cl. 250-372.000.

Drori, Mordeki. Backwashable filter. 4,614,581, Cl. 210-108.000.

Drury, David J.; and Williams, Peter S., to BP Chemicals Limited. Preparation of carboxylic acids and esters thereof. 4,614,816, Cl. 560-243.000.

Dubois, Jean C.: *See—*
Le Barny, Pierre; Dubois, Jean C.; and Ravaux, Gilles, 4,614,608, Cl. 252-299.640.

Duebon, Manfred: *See—*
Dietze, Herbert; Huebner, Dietmar; Wagner, Friedhelm; Duebon, Manfred; and Wenz, Gerd, 4,614,269, Cl. 206-387.000.

Dumenil, Claude G.; and Dumenil, Louis P. Automatically actuated seal for sealing buildings, particularly doors and windows. 4,614,060, Cl. 49-303.000.

Dumenil, Louis P.: *See—*
Dumenil, Claude G.; and Dumenil, Louis P., 4,614,060, Cl. 49-303.000.

Dunlop Limited: *See—*
Curtis, Michael E.; and Haines, Robert C., 4,614,627, Cl. 264-46.600.

Dunlop Limited a British Company: *See—*
Skipper, John B., 4,614,455, Cl. 403-133.000.

Du Pont de Nemours, E. I., and Company: *See—*
Barsotti, Robert J., 4,614,683, Cl. 428-220.000.
Falcoff, Allan F., 4,614,300, Cl. 239-71.000.
Lall, Chaman, 4,614,544, Cl. 75-246.000.
Tocker, Stanley, 4,614,799, Cl. 544-182.000.
Wheeler, James W., 4,614,801, Cl. 544-345.000.

Durr, Frederick E.: *See—*
Murdock, Keith C.; and Durr, Frederick E., 4,614,618, Cl. 260-380.000.

Duruz, Jean J.; Derivaz, Jean-Pierre; Debely, Pierre-Etienne; and Adorian, Iudita L., to Eltech Systems Corporation. Molten salt electrowinning method, anode and manufacture thereof. 4,614,569, Cl. 204-67.000.

Duyvesteyn, Willem P. C.; and Jha, Mahesh C., to AMAX Inc. Mixed lixiviant for separate recovery of zinc and lead from iron-containing waste materials. 4,614,543, Cl. 75-101.00R.

Dynamit Nobel AG: *See—*
Kuhnel, Werner; and Spielau, Paul, 4,614,753, Cl. 521-85.000.

E. R. Squibb & Sons, Inc.: *See—*
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,614,825, Cl. 548-252.000.

Eales, Brian A.; Bricheno, Terry; Leggett, Norman D.; and Ashton, John E. U., to International Standard Electric Corporation. Injection laser packages. 4,615,031, Cl. 372-36.000.

Eastman Kodak Company: *See—*
Katerberg, James A.; Craig, Evan L.; and Huliba, David A., 4,614,948, Cl. 346-75.000.
Mir, Jose M.; and Agostinelli, John A., 4,614,408, Cl. 350-388.000.
Moberg, Gregory O., 4,614,912, Cl. 329-110.000.
Tamary, Ernest J., 4,614,560, Cl. 156-357.000.

Easton, Ian A.; and Gorham, Stephen D., to Johnson & Johnson. Protein/polysaccharide complexes. 4,614,794, Cl. 530-356.000.

Eaton Corporation: *See—*
Edelen, Stephen A.; and Morscheck, Timothy J., 4,614,126, Cl. 74-333.000.
Theisen, Peter J.; Rusenko, James J.; and Navratil, Frank, Jr., 4,614,851, Cl. 200-146.00R.

Ebara Corporation: *See—*
Yamazaki, Shigeru; Nirasawa, Kazuo; and Nishimori, Sinji, 4,614,904, Cl. 318-793.000.

Ebner, Edwin D.: *See—*
Colodner, Jesse L.; and Ebner, Edwin D., 4,614,237, Cl. 169-12.000.

Ebneth, Harold; Preis, Lothar; Giesecke, Henning; and Wolf, Gerhard D., to Bayer Aktiengesellschaft. Reinforced composite comprising resin impregnated metallized polyaramide fabric and method of making same. 4,614,684, Cl. 428-252.000.

Eckert, Gunter: *See—*
Fikentscher, Rolf; Schneider, Siegfried; Klahr, Erhard; Reinert, Friedrich; Eckert, Gunter; and Stuebinger, Adolf, 4,614,613, Cl. 548-964.000.

Eckold, Gerd-Jurgen; and Maab, Hans, to Walter Eckold GmbH & Co. KG. Device for joining metal sheets by a rivetting-type method. 4,614,017, Cl. 29-243.530.

Eckstein, Rolf: *See—*
Waldrich, Otto; and Eckstein, Rolf, 4,614,468, Cl. 409-211.000.

Economy, James; and Zachariades, Anagnostis E., to International Business Machines Corporation. Rotational compression process for forming liquid crystalline polymers with ultra-high mechanical properties. 4,614,629, Cl. 264-176.100.

Edelen, Stephen A.; and Morscheck, Timothy J., to Eaton Corporation. Power synchronizer. 4,614,126, Cl. 74-333.000.

Edison Price, Inc.: *See—*
Price, Edison A.; and Bengochea, Fulgencio V., 4,614,072, Cl. 52-484.000.

Edmunds, Cyril G.: *See—*
Folkins, Jeffrey J.; Edmunds, Cyril G.; and Hart, Steven C., 4,614,165, Cl. 118-657.000.

Edwards, Douglas C.; and Padliya, Dilipkumar, to Polysar Limited. Low molecular weight polymer process. 4,614,772, Cl. 525-388.000.

Egis Gyogyszergyar: *See—*
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Eguchi, Shinsuke, to Nissan Motor Company, Limited. Clutch drum for automatic transmission. 4,614,259, Cl. 192-70.110.

Electric Power Research Institute: *See—*
Bedell, John R., 4,614,218, Cl. 164-253.000.

Electro-Biology, Inc.: *See—*
Gardner, Arthur M. N.; and Fox, Roger H., 4,614,179, Cl. 128-64.000.
Gardner, Arthur M. N.; and Fox, Roger H., 4,614,180, Cl. 128-64.000.

Electronic Concepts, Inc.: *See—*
Lavene, Bernard, 4,614,995, Cl. 361-308.000.

Elekes, Istvan: *See—*
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Elektroakusztikai Gyar: *See—*
Rajkai, Gabor; Szabo, Rozalia; Dohar, Istvan; Vinkovits, Sandor; Hetei, Marta; and Florian, Gyorgy, 4,615,027, Cl. 364-726.000.

Elfverson, Sven E., to Saab-Scania Aktiebolag. Nozzle for discharging ventilation air from a ventilation system. 4,614,151, Cl. 98-2.000.

Elggren, Richard W.: *See—*
North, Vaughn W.; and Elggren, Richard W., 4,614,366, Cl. 283-70.000.

Eli Lilly and Company: *See—*
Flaugh, Michael E., 4,614,807, Cl. 548-507.000.

Elliott, Richard L.; and Ruehle, Paul H., to Vetamix. Process for the production of xylazine. 4,614,798, Cl. 544-53.000.

Else, Robert F., to Britax (Wingard) Limited. Clamping means for a strap. 4,614,007, Cl. 24-136.00K.

Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Steering gear. 4,614,127, Cl. 74-422.000.

Elshof, Leonardus A. M.: *See—*
Geenen, Constant J. M.; and Elshof, Leonardus A. M., 4,614,893, Cl. 313-403.000.

Eltech Systems Corporation: *See—*
Duruz, Jean J.; Derivaz, Jean-Pierre; Debely, Pierre-Etienne; and Adorian, Iudita L., 4,614,569, Cl. 204-67.000.

Emhart Industries, Inc.: *See—*
Graves, Brian J., 4,614,122, Cl. 73-861.740.

Empresas Lanzagorta, S.A. de C.V.: *See—*
Kalsi, Manmohan S.; and Horst, Clemens L., 4,614,330, Cl. 251-283.000.

Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, to Shimizu Construction Co., Ltd.; and Yamagiwa Corporation. Ceiling illumination apparatus. 4,614,996, Cl. 362-147.000.

Endo, Akinori; Shimanari, Tatsumi; and Watanabe, Shunji, to Casio Electronic, Mfg. Co. Ltd.; and Casio Computer Co., Ltd. Copying apparatus. 4,614,424, Cl. 355-56.000.

Endo, Michio: *See—*
Furukawa, Takashi; Endo, Michio; Takemoto, Nagayasu; and Watanabe, Kunio, 4,614,551, Cl. 148-12.00F.

Energy Modifications Enterprises, Inc.: *See—*
Koch, Andrew B., 4,614,086, Cl. 60-624.000.

Engbert, Theodor: *See—*
Richter, Roland; Muller, Hanns P.; Kubitza, Werner; Engbert, Theodor; and Mennicken, Gerhard, 4,614,785, Cl. 528-45.000.

Engelman, Peter J.: *See—*
Sheehan, Judith M.; and Engelman, Peter J., 4,614,360, Cl. 281-45.000.

Englin, Robert A., to St. Peter Creamery. Bag filler apparatus. 4,614,213, Cl. 141-59.000.

Enkel Corporation: *See—*
Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., 4,614,313, Cl. 242-58.600.

Ensell, Robert G.: *See*—
Toth, Michael J.; and Ensell, Robert G., 4,614,279, Cl. 220-3.000.
Epple, Gerhard; Krallmann, Reinhold; Kermer, Wolf-Dieter; and Weber, Hans, to Basf Aktiengesellschaft. Anthraquinoid dyes. 4,614,804, Cl. 548-160.000.
Epstein, Ronald A.: *See*—
Crawford, Janet E.; Epstein, Ronald A.; and Triplett, Kelly B., 4,614,729, Cl. 502-401.000.
Erickson, Donald C. Water vapor absorbent containing cesium hydroxide. 4,614,605, Cl. 252-69.000.
Ernest, Ivan; Kalvoda, Jaroslav; and Frostl, Wolfgang, to Ciba-Geigy Corporation. Process for the manufacture of optically active azetidinones. 4,614,614, Cl. 540-359.000.
Ernst, Roland; Garnier, Marcel; Giroutru, Michel; and Moreau, Rene , to Vallourec. Magnetic rotor for the continuous casting of hollow bodies. 4,614,225, Cl. 164-504.000.
ESSEF Industries, Inc.: *See*—
Toth, Michael J.; and Ensell, Robert G., 4,614,279, Cl. 220-3.000.
Esselte Pendaflex Corporation: *See*—
Hetzer, Nobert; and Sommerfeld, Wolfgang, 4,614,163, Cl. 118-268.000.
Essex Group, Inc.: *See*—
Lavallee, Francois A., 4,614,670, Cl. 427-118.000.
Estebanez, Joseph: *See*—
King, Frank E.; Estebanez, Joseph; and Lang, Reginald W., 4,614,201, Cl. 137-68.100.
Ethyl Corporation: *See*—
Roark, David N., 4,614,593, Cl. 210-708.000.
Eue, Ludwig: *See*—
Riebel, Hans-Jochem; Eue, Ludwig; Faust, Wilfried; and Priesnitz, Uwe, 4,614,537, Cl. 71-94.000.
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,614,532, Cl. 71-92.000.
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lursaen, Klaus, 4,614,534, Cl. 71-92.000.
Evers, Jack R., to Flex Straw Limited. Apparatus for serially inserting straws into pouches. 4,614,074, Cl. 53-128.000.
Ex-Cell-O Corporation: *See*—
Halvorsen, Robert M.; and Hurst, Jeffrey B., 4,614,202, Cl. 137-118.000.
EXACTident, Inc.: *See*—
North, Vaughn W.; and Elggren, Richard W., 4,614,366, Cl. 283-70.000.
Exxon Chemical Patents Inc.: *See*—
Keener, Ivian G.; Newlove, John C.; Portnoy, Robert C.; Fehler, Daniel F.; and Pober, Kenneth W., 4,614,235, Cl. 166-301.000.
Exxon Research and Engineering Co.: *See*—
Kiczek, Edward F.; Beckner, Mervyn J.; and Trimon, Emiliano, 4,614,490, Cl. 431-4.000.
Oldweiler, Morey E., 4,614,229, Cl. 165-115.000.
F.F. Plastics R.D. Inc.: *See*—
Farkas, Frank, 4,614,056, Cl. 47-67.000.
FAG Kugelfischer Georg Schafer (KGaA): *See*—
Dreschmann, Peter; Walter, Wilhelm; Scharting, Gunter; and Neugebauer, Steffen, 4,614,446, Cl. 384-484.000.
Falcoff, Allan F., to Du Pont de Nemours, E. I., and Company. Computerized spray machine. 4,614,300, Cl. 239-71.000.
Falipou, Jean: *See*—
Clot, Jean; and Falipou, Jean, 4,614,084, Cl. 60-325.000.
Fanuc Ltd.: *See*—
Ibbott, Jack K., 4,614,695, Cl. 429-127.000.
Fanuc Ltd: *See*—
Kawada, Shigeki; and Fujioka, Yoshiki, 4,614,020, Cl. 29-568.000.
Obara, Haruki; and Izumiya, Shunzo, 4,614,854, Cl. 219-69.00C.
Farkas, Frank, to F.F. Plastics R.D. Inc. Stacking planters. 4,614,056, Cl. 47-67.000.
Farkas nee Kirjak, Maria: *See*—
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.
Farrington, Theodore E., Jr.; Spahni, Milton D.; and Rattray, Thomas, to Procter & Gamble Company, The. Disposable absorbent mat structure for removal and retention of wet and dry soil. 4,614,679, Cl. 428-138.000.
Fastenau, Robert H. J.: *See*—
Koorneef, Jacob; Fastenau, Robert H. J.; and van der Heijden, Paulus J. J. M., 4,614,501, Cl. 445-47.000.
Faul, Thomas L., to Teckserve Ltd. Connecting means for cover. 4,614,282, Cl. 220-307.000.
Faust, Wilfried: *See*—
Riebel, Hans-Jochem; Eue, Ludwig; Faust, Wilfried; and Priesnitz, Uwe, 4,614,537, Cl. 71-94.000.
Favale, Anthony G.: *See*—
Albert, William G.; Astell, Gerald G.; Favale, Anthony G.; and Steiff, Leon H., 4,614,389, Cl. 339-45.00M.
Fay, Philip J.: *See*—
Chavin, Stephen I.; and Fay, Philip J., 4,614,795, Cl. 530-383.000.
Federal Paper Board Co., Inc.: *See*—
Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., 4,614,297, Cl. 229-132.000.
Fehler, Daniel F.: *See*—
Keener, Ivian G.; Newlove, John C.; Portnoy, Robert C.; Fehler, Daniel F.; and Pober, Kenneth W., 4,614,235, Cl. 166-301.000.
Fekete, Andras; Seres, Laszlo ; Foldesi, Istvan; and Rusz, Vazul, to MEM Muszaki Intezet. Apparatus for controlling and indicating speed and load of mobile chopping machine. 4,614,305, Cl. 241-36.000.
Feldman, Martin; Heimann, Peter A.; Johnson, William A.; Retajczyk, Theodore F., Jr.; and White, Donald L., to AT&T Bell Laboratories. Mask-to-wafer alignment utilizing zone plates. 4,614,433, Cl. 356-401.000.
Felici, Corindo: *See*—
Welch, Henry H.; and Felici, Corindo, 4,614,434, Cl. 356-418.000.
Fendya, Thomas J.: *See*—
Nagare, Arthur T.; Mueller, Wolfgang; Fendya, Thomas J.; and Sestak, Joseph T., 4,614,015, Cl. 29-239.000.
Ferguson, Donald E., to Buckeye International, Inc. Method of manufacturing a valve sleeve. 4,614,014, Cl. 29-157.10R.
Fernandez, David. Tennis racket frame made of metal oxide fibers and ceramic particles. 4,614,341, Cl. 273-73.00C.
Ferrante, Ronald A.: *See*—
Kersten, Gerard M.; and Ferrante, Ronald A., 4,614,403, Cl. 350-252.000.
Ferrari, Paolo: *See*—
Bertotti, Franco; Ferrari, Paolo; Foroni, Mario; and Garue, Sergio, 4,614,962, Cl. 357-38.000.
Fetzer, Jurgen, to Siemens Aktiengesellschaft. Electrical wound capacitor with internal series connection. 4,614,994, Cl. 361-303.000.
Fev Forschungsgesellschaft fur Energietechnik und Verbrennungsmotoren mbH: *See*—
Pischinger, Franz; and Kreuter, Peter, 4,614,170, Cl. 123-90.110.
Feygin, Ilya: *See*—
Liss, Saul; Liss, Bernard S.; Krakower, Sam; and Feygin, Ilya, 4,614,866, Cl. 250-214.00A.
Fickler, Hans, to Lars International S.A., Luxembourg. Linear drive device with two motors. 4,614,128, Cl. 74-424.80B.
Fiedler, Gerhard; and Fritzsche, Werner, to VEB Forschung und Entwicklung; and Betrieb des VEB Kombinat Wolle und Seide. Method and apparatus for optimizing thermal treatment processes for fabrics. 4,614,044, Cl. 34-25.000.
Figliuzzi, Vincent D. Ultra high compression engine. 4,614,169, Cl. 123-54.00R.
Fikentscher, Rolf; Schneider, Siegfried; Klahr, Erhard; Reinert, Friedrich; Eckert, Gunter; and Stuebinger, Adolf, to BASF Aktiengesellschaft. Preparation of β-N-aziridinopropionates. 4,614,613, Cl. 548-964.000.
Finlay, David E.; Norgren, Kent S.; and Shook, Frankie S., to International Business Machines Corporation. Memory controller with synchronous or asynchronous interface. 4,615,017, Cl. 364-900.000.
Fisermann, Armin, to Schulte-Schlagbaum Aktiengesellschaft. Electrically actuatable locking device. 4,614,862, Cl. 235-382.500.
Fishburne, Francis B. Method and apparatus for conveying weighed amounts of material. 4,614,264, Cl. 198-505.000.
Fisons plc: *See*—
Wright, Robert G. M., 4,614,802, Cl. 546-89.000.
Fitzpatrick, J. Michael: *See*—
Smolanoff, Joel R.; Fitzpatrick, J. Michael; and Ollinger, Janet, 4,614,734, Cl. 514-101.000.
Fivaz, Robert; Pfisterer, Dieter; and Sigg, Hans, to Meseltron, S.A. Head for measuring diameters of cylindrical parts. 4,614,038, Cl. 33-149.00J.
Flanigan, Paul J., to Carrier Corporation. Terminal plate assembly. 4,614,397, Cl. 339-132.00B.
Flaugh, Michael E., to Eli Lilly and Company. 6,7-dihalomelatonins. 4,614,807, Cl. 548-507.000.
Flex Straw Limited: *See*—
Evers, Jack R., 4,614,074, Cl. 53-128.000.
Flexcon Company, Inc.: *See*—
Pennace, John R.; and Quinn, Sharon A., 4,614,677, Cl. 428-40.000.
Fling, Russell T., to RCA Corporation. Log and antilog functions for video baseband processing. 4,614,935, Cl. 340-347.0DD.
Florian, Gyorgy: *See*—
Rajkai, Gabor; Szabo, Rozalia; Dohar, Istvan; Vinkovits, Sandor; Hetei, Marta; and Florian, Gyorgy, 4,615,027, Cl. 364-726.000.
Floyd, Robert E., to United States of America, Air Force. Magnetostatic wave frequency analyzer apparatus. 4,614,919, Cl. 333-133.000.
Focke & Co., (GmbH & Co.): *See*—
Focke, Heinz; and Liedtke, Kurt, 4,614,075, Cl. 53-168.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Co., (GmbH & Co.). Packaging machine with a supply holder for reels. 4,614,075, Cl. 53-168.000.
Foldesi, Istvan: *See*—
Fekete, Andras; Seres, Laszlo ; Foldesi, Istvan; and Rusz, Vazul, 4,614,305, Cl. 241-36.000.
Folkins, Jeffrey J.; Edmunds, Cyril G.; and Hart, Steven C., to Xerox Corporation. Extended life development system. 4,614,165, Cl. 118-657.000.
Ford Aerospace & Communications Corporation: *See*—
vanOmmering, Gerrit; and Koehler, Charles W., 4,614,025, Cl. 29-623.100.
Forems, Inc.: *See*—
Mayer, Edward F., 4,614,353, Cl. 280-406.00A.
Forget, Daniel. Tab lifting and crimping tool. 4,614,106, Cl. 72-384.000.
Forget, Kenneth M.: *See*—
Charlton, Keith D.; Bracnik, Anthony S.; and Forget, Kenneth M., 4,614,010, Cl. 24-639.000.
Fornataro, Augustine A., to Herr-Voss Corporation. Method of rewinding slit metal strands. 4,614,101, Cl. 72-160.000.
Foroni, Mario: *See*—
Bertotti, Franco; Ferrari, Paolo; Foroni, Mario; and Garue, Sergio, 4,614,962, Cl. 357-38.000.

Fort Dodge Chemical Company: *See*—
Curlett, John, 4,614,160, Cl. 111-96.000.
Forth, Hans-Joachim: *See*—
Bachler, Werner; Forth, Hans-Joachim; and Klein, Hans-Hermann, 4,614,093, Cl. 62-55.500.
Fortin, Paul E.; and Bull, Michael J., to Alcan International Limited. Aluminum alloy sheet product. 4,614,552, Cl. 148-417.000.
Foster Grant Corporation: *See*—
Shelton, Robert N.; and Mowrer, Gail S., 4,614,272, Cl. 211-163.000.
Foster, Robert S. Multiple part shipping label. 4,614,361, Cl. 282-8.00R.
Fourie, Gideon; and Muir, David E., to South African Inventions Development Corporation. Pallet with tensioned strips and bulk bin. 4,614,277, Cl. 217-43.00A.
Fournier, Paul J. E., to Aeroquip Corporation. Anti-blowout seal. 4,614,348, Cl. 277-188.00A.
Fovenyessy, Otto K. Fish hook protective cover. 4,614,054, Cl. 43-43.200.
Fowler, David K.: *See*—
Lannert, James W.; Sanders, James D.; Fowler, David K.; and Love, Jerry G., 4,614,374, Cl. 292-337.000.
Fox, Richard C., to Teledyne Industries, Inc. Piston engine having a phosphatized cylinder wall. 4,614,185, Cl. 123-668.000.
Fox, Roger H.: *See*—
Gardner, Arthur M. N.; and Fox, Roger H., 4,614,179, Cl. 128-64.000.
Gardner, Arthur M. N.; and Fox, Roger H., 4,614,180, Cl. 128-64.000.
Foxboro Company, The: *See*—
Zavracky, Paul M.; Senturia, Stephen D.; and Morrison, Richard H., Jr., 4,614,119, Cl. 73-704.000.
Fradin, Louis; Plaquin, Bernard; and Salkin, Herve , to Vallourec. Determination of the make-up torque for pipe joints. 4,614,120, Cl. 73-761.000.
Frampton, Jeffery A.; and Bartman, Nicholas, to Idex (Jersey) Limited. Handle. 4,614,376, Cl. 296-224.000.
Franco, Eduardo G.; and Trimmer, James E., to Franco, Eduardo G. Bed pedestal. 4,613,999, Cl. 5-400.000.
Frank, Martin; and Plassmeier, Klaus. Process and device for cooling in containers. 4,614,091, Cl. 62-384.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,614,238, Cl. 171-16.000.
Fred Hutchinson Cancer Research Center: *See*—
Bensinger, William I., 4,614,513, Cl. 604-6.000.
Frederick, Robert E., to Link Engineering Company. Stator coil lacing cord securing apparatus and method. 4,614,161, Cl. 112-121.200.
Frerking, James R. Method for fabricating a tennis racquet frame. 4,614,626, Cl. 264-46.400.
Friedrich Grohe Armaturenfabrik GmbH & Co.: *See*—
Korfgen, Harald; Geipel, Werner; and Heimann, Bruno, 4,614,449, Cl. 401-287.000.
Frisch, Kurt C.: *See*—
Ashida, Kaneyoshi; van der Loos, Jozef L. M.; and Frisch, Kurt C., 4,614,615, Cl. 540-525.000.
Frito-Lay, Inc.: *See*—
Ryan, Philip J.; and Desai, Pravin, 4,614,162, Cl. 118-19.000.
Fritz, Manfred; Scheel, Hans; and Wangerin, Gerhard, to SMS Schloemann-Siemag Aktiengesellschaft. Circular cutter shears for the longitudinal edging of plates and sheets. 4,614,142, Cl. 83-496.000.
Fritzsche, Werner: *See*—
Fiedler, Gerhard; and Fritzsche, Werner, 4,614,044, Cl. 34-25.000.
Frostl, Wolfgang: *See*—
Ernest, Ivan; Kalvoda, Jaroslav; and Frostl, Wolfgang, 4,614,614, Cl. 540-359.000.
Fry, William F.; and Sitler, Rickie L., to Armstrong World Industries, Inc. Method for making decorative product. 4,614,556, Cl. 156-78.000.
Fry, William F.; and Sitler, Rickie L., to Armstrong World Industries, Inc. Decorative product. 4,614,680, Cl. 428-158.000.
Fuchs, Gerhard; Hertenstein, Roland R.; and Quick, Hans G., to Fuchs Recycling GmbH & Co. Process and apparatus for removing rubber and/or plastic material from composite bodies comprising metal and at least one of said materials. 4,614,752, Cl. 521-44.500.
Fuchs Recycling GmbH & Co.: *See*—
Fuchs, Gerhard; Hertenstein, Roland R.; and Quick, Hans G., 4,614,752, Cl. 521-44.500.
Fudalla, Manfred; and Steiner, Walter, to Weener Plastik GmbH & Co. KG. Device for the dosed dispensing of liquid. 4,614,255, Cl. 222-454.000.
Fuji Photo Film Co., Ltd.: *See*—
Fujita, Munehisa; Hayashi, Yasuhiro; Ozawa, Takashi; and Ohki, Nobutaka, 4,614,707, Cl. 430-379.000.
Hayashi, Hiroshi; Katoh, Kazunobu; and Yoshida, Takashi, 4,614,681, Cl. 428-201.000.
Kitatani, Katsugi; Murata, Masataka; Yokoya, Hiroaki; and Suzuki, Nobuo, 4,614,699, Cl. 430-115.000.
Kubo, Takashi, 4,614,563, Cl. 156-643.000.
Oishi, Kengo, 4,614,270, Cl. 206-389.000.
Ryoke, Katsumi; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,614,685, Cl. 428-323.000.
Sawada, Satoru; and Yabuki, Yoshiharu, 4,614,702, Cl. 430-203.000.
Shimizu, Shigehisa; Suzuki, Chiaki; Harada, Kazumasa; and Maeda, Tomohisa, 4,614,019, Cl. 29-450.000.
Sugimoto, Tadao; and Hayakawa, Toshiaki, 4,614,711, Cl. 430-567.000.
Sugiyama, Takekatsu; and Matsukawa, Hiroharu, 4,614,955, Cl. 346-200.000.
Tamagawa, Shigehisa; and Takayanagi, Takashi, 4,614,688, Cl. 428-331.000.
Fuji Photo Optical Co., Ltd.: *See*—
Sakai, Yutaka, 4,614,409, Cl. 350-410.000.
Fujii, Hiroshi; and Shimonabe, Hideyuki, to Hitachi, Ltd. Pulse width modulation inverter system. 4,615,000, Cl. 363-41.000.
Fujii, Masahiko: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Ohara, Minoru; Kobayashi, Akira; and Akatsu, Tsuneo, 4,614,733, Cl. 514-54.000.
Fujii, Takayoshi: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Ohara, Minoru; Kobayashi, Akira; and Akatsu, Tsuneo, 4,614,733, Cl. 514-54.000.
Fujioka, Yoshiki: *See*—
Kawada, Shigeki; and Fujioka, Yoshiki, 4,614,020, Cl. 29-568.000.
Fujisaki, Akira: *See*—
Trukuda, Takaaki; Hata, Toyohiko; and Fujisaki, Akira, 4,614,929, Cl. 335-284.000.
Fujisawa, Kyuichi: *See*—
Arazu, Shuichi; Tamukai, Tadao; and Fujisawa, Kyuichi, 4,615,012, Cl. 364-520.000.
Fujishima, Tetsuro; and Yamamoto, Yoshiomi, to Yamasa Shoyu Kabushiki Kaisha. Process for producing ribavirin. 4,614,719, Cl. 435-85.000.
Fujita, Munehisa; Hayashi, Yasuhiro; Ozawa, Takashi; and Ohki, Nobutaka, to Fuji Photo Film Co., Ltd. Color reversal photographic light-sensitive materials. 4,614,707, Cl. 430-379.000.
Fujitsu Limited: *See*—
Yamashita, Atsushi; Katoh, Tadayoshi; and Kurihara, Hiroshi, 4,614,933, Cl. 340-347.0DD.
Yoshida, Masanobu; and Itano, Kiyoshi, 4,614,881, Cl. 307-219.000.
Yoshida, Masanobu; and Itano, Kiyoshi, 4,615,021, Cl. 365-189.000.
Fukasaku, Yoshinori; Hashimoto, Katsuhiko; and Noto, Kunihiro, to Hitachi, Ltd. Air induction system for automotive air-conditioner. 4,614,152, Cl. 98-2.000.
Fukuda, Hiroaki; Sumiyoshi, Kenji; Masaki, Ryoichi; and Tani, Zempei, to Sharp Kabushiki Kaisha. Original document size detecting arrangement. 4,614,874, Cl. 250-560.000.
Fukuda, Michio: *See*—
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.
Fukui, Tsutomu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for reproducing video signal. 4,614,981, Cl. 358-337.000.
Fukunaga, Takao, to Kabushiki Kaisha Daikin Seisakusho. Automatic speed change control methods for self-movable vehicle. 4,614,258, Cl. 192-0.052.
Furukawa, Kenji: *See*—
Inoue, Hiromichi; Saito, Shinichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, 4,614,609, Cl. 252-299.660.
Furukawa, Osamu, to Nissan Motor Co., Ltd. Mast channel member configuration of forklift truck. 4,614,253, Cl. 187-9.00E.
Furukawa, Takashi; Endo, Michio; Takemoto, Nagayasu; and Watanabe, Kunio, to Nippon Steel Corporation. Process for producing low yield ratio, high strength two-phase steel sheet having excellent artificial ageing property after working. 4,614,551, Cl. 148-12.00F.
Furukawa, Yoshimi: *See*—
Sano, Shoichi; Furukawa, Yoshimi; and Tashiro, Yutaka, 4,614,351, Cl. 280-91.000.
Furukawa, Yuzo: *See*—
Hori, Teruo; Nakabayashi, Masamitsu; and Furukawa, Yuzo, 4,614,781, Cl. 525-330.600.
Furuya, Inosuke; and Yamazaki, Hideo, to Kabushiki Kaisha Okawara Seisakusho. Soybean processing. 4,614,665, Cl. 426-634.000.
Fushimi, Satoru: *See*—
Hara, Yasuhiko; Ohshima, Yoshimasa; Fushimi, Satoru; and Makihira, Hiroshi, 4,614,430, Cl. 356-394.000.
G. D. Searle & Co.: *See*—
Mueller, Richard A., 4,614,617, Cl. 540-547.000.
GAF Corporation: *See*—
Liu, Kou-Chang, 4,614,538, Cl. 71-121.000.
Ruppert, Ronald M.; and Savio, Lenore E., 4,614,519, Cl. 8-137.000.
Gaffal, Karl, to Klein, Schanzlin & Becker Aktiengesellschaft. Pressure equalizing device for the electric motor of an encapsulated motor-pump assembly. 4,614,482, Cl. 417-367.000.
Galvin, Aaron A.: *See*—
Rattman, William J.; Marchetti, Stephen; and Galvin, Aaron A., 4,614,968, Cl. 358-93.000.
Gammill, Ronald B., to Upjohn Company, The. Antiatherosclerotic furochromones and intermediates therefor. 4,614,809, Cl. 549-387.000.
Gandolfi, Ottavio, to Yissum Research Development Company of the Hebrew University of Jerusalem. Novel organoplatinum(II) complexes and method for the preparation thereof. 4,614,811, Cl. 556-137.000.
Ganga, Roland A., to Atochem. Flexible composite material and process for producing same. 4,614,678, Cl. 428-74.000.
Ganguly, Ashit K.: *See*—
Girijavallabhan, Vivyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,614,738, Cl. 514-194.000.
Gardner, Arthur M. N.; and Fox, Roger H., to Electro-Biology, Inc. Medical appliance. 4,614,179, Cl. 128-64.000.

Gardner, Arthur M. N.; and Fox, Roger H., to Electro-Biology, Inc. Medical appliance. 4,614,180, Cl. 128-64.000.

Garnier, Marcel: *See—*
Ernst, Roland; Garnier, Marcel; Giroutru, Michel; and Moreau, Rene , 4,614,225, Cl. 164-504.000.

Garrett Corporation, The: *See—*
Keaton, Robert E., 4,614,217, Cl. 164-137.000.
Miller, David D., 4,614,500, Cl. 441-40.000.

Gartner, Fritz, to Josef Gartner & Co. Apparatus providing a weld-free joint for intersecting pipes or tubes within a conduit system. 4,614,370, Cl. 285-150.000.

Garue, Sergio: *See—*
Bertotti, Franco; Ferrari, Paolo; Foroni, Mario; and Garue, Sergio, 4,614,962, Cl. 357-38.000.

Gas Energy, Inc.: *See—*
Russo, Onofrio N., 4,614,203, Cl. 137-385.000.

Gates Rubber Company, The: *See—*
Ito, Leonard N., 4,614,346, Cl. 277-34.000.
Steinhagen, Thomas C., 4,614,207, Cl. 138-96.00T.

Gaylord, James K. Devices for automotive vehicle coil springs. 4,614,333, Cl. 267-61.00S.

Gebhardt, Ulrich: *See—*
Mund, Konrad; Luft, Gunter; and Gebhardt, Ulrich, 4,614,577, Cl. 204-415.000.

Geenen, Constant J. M.; and Elshof, Leonardus A. M., to U.S. Philips Corporation. Color display tube. 4,614,893, Cl. 313-403.000.

Gehring, Reinhold: *See—*
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, 4,614,533, Cl. 71-92.000.
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lurssen, Klaus, 4,614,534, Cl. 71-92.000.

Geipel, Werner: *See—*
Korfgen, Harald; Geipel, Werner; and Heimann, Bruno, 4,614,449, Cl. 401-287.000.

Gemmel, Edwin: *See—*
Kuhl, Wilfried; and Gemmel, Edwin, 4,614,850, Cl. 200-144.00B.

Gemra, Richard J.; and Martinez, Manuel, to AT&T Technologies, Inc. Aerial drop wire splicer. 4,614,399, Cl. 339-205.000.

Gendernalik, Robert A. Circuit board storage apparatus. 4,614,385, Cl. 312-320.000.

General Dynamics Corp./Convair Division: *See—*
Couilahn, John F., 4,614,368, Cl. 285-10.000.

General Dynamics, Electronics Division: *See—*
Polley, Bradford L.; and Priester, Gary P., 4,614,383, Cl. 312-273.000.

General Electric Company: *See—*
Bottomley, Paul A.; and Glover, Gary H., 4,614,195, Cl. 128-653.000.
Brooks, Robert B., 4,614,088, Cl. 62-137.000.
Hickey, John S.; and Roemer, Peter B., 4,614,930, Cl. 335-302.000.
Itani, Abdallah M.; and Roberts, Victor D., 4,614,898, Cl. 315-224.000.
Laskaris, Evangelos T., 4,614,393, Cl. 339-95.00R.
Sterman, Aibert P.; Wakeman, Thomas G.; and Williams, Jesse J., 4,614,082, Cl. 60-39.320.
Terhune, James H., 4,614,635, Cl. 376-154.000.

General Instrument Corporation: *See—*
Kaminetzky, Dov A., 4,614,946, Cl. 343-18.00E.

General Motors Corporation: *See—*
Anderson, John D.; and MacGregor, James W., 4,614,219, Cl. 164-369.000.
Braisted, Leon O., Jr., 4,614,451, Cl. 403-14.000.
Hall, Arthur, III, 4,614,131, Cl. 74-720.500.
Hall, Arthur, III, 4,614,132, Cl. 74-720.500.
Lundin, Donald G.; and Knable, Joseph J., 4,614,359, Cl. 280-699.000.
Miller, Larry D.; and Drabik, Thomas D., 4,614,375, Cl. 296-97.00G.

General Services Engineering, Inc.: *See—*
Dorsey, James M., 4,614,089, Cl. 62-158.000.

Georg Fischer Aktiengesellschaft: *See—*
Overath, Friedhelm; and Saner, Remo, 4,614,369, Cl. 285-55.000.

George, Flint R.: *See—*
Colle, Edward A., Jr.; George, Flint R.; and Yates, Donald N., Jr., 4,614,156, Cl. 102-312.000.

Georgiev, Vassil S.; Mack, Robert A.; and Kinsolving, Clyde R., to Pennwalt Corporation. 4,5-dihydro-4-oxo-2-[(2-trans-phenylcyclopropyl)amino]-3-furancarboxylic acids and derivatives thereof. 4,614,810, Cl. 549-479.000.

Gerard, Frank; and Gerard, Frank J. Permanent magnet steam generator. 4,614,853, Cl. 219-10.510.

Gerard, Frank J.: *See—*
Gerard, Frank; and Gerard, Frank J., 4,614,853, Cl. 219-10.510.

Gerhard, Helmut, to Westerwaelder Eisenwerk Gerhard GmbH. Tank container. 4,614,278, Cl. 220-1.500.

Gerkema, Jan; and Pelzer, Jozef B., to U.S. Philips Corporation. Metal-lubricated helical-groove bearing comprising an anti-wetting layer. 4,614,445, Cl. 384-368.000.

German, Johann: *See—*
Klink, Rainer; and German, Johann, 4,614,260, Cl. 192-105.0CE.

Gerrits, Wilhelmus P. M.; and Huber, Alois, to U.S. Philips Corporation. Magnetic-tape apparatus with improved brake-type tension control. 4,614,315, Cl. 242-200.000.

Gerstenberger, David C.: *See—*
von Gunten, Marc K.; Cook, Benjamin H.; and Gerstenberger, David C., 4,615,034, Cl. 372-99.000.

Gerundt, Sebastian; Guse, Rolf; Halterbeck, Walter; Hollenberg, Gunter; Maier, Gerhard; and Muller, Karl-Heinz, to Thomas Josef Heimbach GmbH, Co. Process for manufacturing an endless tubular felt and apparatus for implementing the process. 4,614,969, Cl. 358-101.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Bohle, Werner, 4,614,134, Cl. 74-768.000.

Ghosh, Sanjib K.: *See—*
Arseneault, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., 4,614,499, Cl. 434-262.000.

Giannini, Umberto: *See—*
Longi, Paolo; Giannini, Umberto; and Mazzocchi, Romano, 4,614,727, Cl. 502-105.000.

Giard, John P.: *See—*
Laing, Donald R.; Sweny, Michael R.; and Giard, John P., 4,614,016, Cl. 29-412.000.

Giesecke, Henning: *See—*
Ebneth, Harold; Preis, Lothar; Giesecke, Henning; and Wolf, Gerhard D., 4,614,684, Cl. 428-252.000.

Giffard, Philip J., to Mineral Deposits Limited. Spiral separator. 4,614,580, Cl. 209-459.000.

Gifu University: *See—*
Muramatsu, Ikuei, 4,615,022, Cl. 367-179.000.

Gigandet, Richard W.; and Batti, Stephen A., to Lincoln Manufacturing Company, Inc. Bake time display for cooking oven. 4,615,014, Cl. 364-557.000.

Gill, Gary W.: *See—*
Coke, Harry E.; and Gill, Gary W., 4,614,686, Cl. 428-327.000.

Gille, Gunther: *See—*
Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, 4,614,903, Cl. 318-443.000.

Gilles, Helmut; and Leussler, Wilhelm, to Metallgesellschaft Aktiengesellschaft. Dust collector with improved collecting electrodes. 4,614,526, Cl. 55-130.000.

Gilson, Jean-Pierre: *See—*
Lambert, Susan L.; Lawson, Randy J.; Johnson, Russell W.; and Gilson, Jean-Pierre, 4,614,834, Cl. 585-419.000.

Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., to Schering Corporation. 2-(N-heterocycloaliphatithio)penems. 4,614,738, Cl. 514-194.000.

Giroutru, Michel: *See—*
Ernst, Roland; Garnier, Marcel; Giroutru, Michel; and Moreau, Rene , 4,614,225, Cl. 164-504.000.

Gitlin, Richard D.: *See—*
Lim, Tong L., deceased; Yu, Keung-Yi P., executor; and Gitlin, Richard D., 4,615,038, Cl. 375-14.000.

Glasberg, Lucian, to Danly Machine Corporation. Apparatus for automatically splitting transfer feed rails in a transfer feed press. 4,614,265, Cl. 198-774.000.

Global Manufacturing Co, Inc.: *See—*
Tompkins, L. Kirk, 4,614,123, Cl. 74-87.000.

Glover, Gary H.: *See—*
Bottomley, Paul A.; and Glover, Gary H., 4,614,195, Cl. 128-653.000.

Gmoser, Johann: *See—*
Daimer, Wolfgang; Gmoser, Johann; and Schipfer, Rudolf, 4,614,783, Cl. 525-504.000.

Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kozo; and Hattori, Sadami, to Pioneer Electronic Corporation. Power supply circuitry for a microcomputer system. 4,614,880, Cl. 307-200.00A.

Gobel, Gerald W., to Boeing Company, The. Passive separation device and method for finned booster. 4,614,318, Cl. 244-3.210.

Gogl, Anil B.; Blackburn, Peggy A.; and Tufts, Timothy A., to Ashland Oil Inc. Stable isocyanate/epoxide prepolymers and thermoset polyurethanes produced therefrom. 4,614,786, Cl. 528-60.000.

Goertler, Horst: *See—*
Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, 4,614,903, Cl. 318-443.000.

Goesele, Wilhelm: *See—*
Appl, Max; Molin, Gerhard D.; Goesele, Wilhelm; Schreiner, Siegfried; and Treiber, Gert, 4,614,647, Cl. 423-515.000.

Goetz, George E. Strapping and hanging device. 4,614,322, Cl. 248-490.000.

Golab, James S.: *See—*
Sood, Lal C.; Golab, James S.; and DeJesus, Armando L., 4,614,883, Cl. 307-449.000.

Gold Star Company, Ltd.: *See—*
Kim, Dal W.; Kim, Kyung H.; and Kim, Seon H., 4,614,092, Cl. 62-408.000.

Goldberg, Edward M.: *See—*
Bazell, Seymour; and Goldberg, Edward M., 4,614,188, Cl. 128-348.100.

Goldberg, Ira B., to Rocwell. Heat recovery calorimeter. 4,614,721, Cl. 436-147.000.

Goldenberg, Carol: *See—*
Zeadman, Zvi; Goldenberg, Carol; and Grinboum, Zvi, 4,614,328, Cl. 251-129.170.

Goldenberg, Philip H., to Beloit Corporation. Rigid link multiple disk refiner. 4,614,309, Cl. 241-163.000.

Goldschmidt, Katalin: *See*—
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Goldstein, Gideon: *See*—
Kung, Patrick C.; and Goldstein, Gideon, 4,614,720, Cl. 435-240.000.

Goldstein, Jonathan M., to Ionics, Incorporated. Microliter scale electrodialysis apparatus. 4,614,576, Cl. 204-299.00R.

Gomez, William: *See*—
Brown, Robert C.; and Gomez, William, 4,614,052, Cl. 42-87.000.

Gonpei, Katsuhiro: *See*—
Kuwahata, Takao; Manabe, Sohei; Gonpei, Katsuhiro; and Nakabayashi, Masatoki, 4,614,891, Cl. 313-386.000.

Goodyear Tire & Rubber Company, The: *See*—
Chlebina, Lawrence E.; Portalupi, Steven J.; and Smith, Michael W., 4,614,268, Cl. 206-304.000.
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,614,310, Cl. 241-259.200.

Googin, John M.; Napier, John M.; Makarewicz, Mark A.; and Meredith, Paul F., to United States of America, Energy. Process for removing mercury from aqueous solutions. 4,614,592, Cl. 210-679.000.

Goosey, Martin T.: *See*—
Brettle, Jack; and Goosey, Martin T., 4,614,963, Cl. 357-72.000.

Gorham, Stephen D.: *See*—
Easton, Ian A.; and Gorham, Stephen D., 4,614,794, Cl. 530-356.000.

Gorman, William G.; Popp, Karl F.; and Mavica, Kenneth M., to Sterling Drug Inc. Antiplaque saccharin salt dentrifices and method of use thereof. 4,614,649, Cl. 424-54.000.

Goto, Akihiko: *See*—
Ida, Keizo; and Goto, Akihiko, 4,614,079, Cl. 53-563.000.

Goto, Tatumi: *See*—
Nakano, Hirotaka; and Goto, Tatumi, 4,615,033, Cl. 372-99.000.

Graham, Anne M.: *See*—
Attig, Thomas G.; Graham, Anne M.; and Pesa, Frederick, 4,614,750, Cl. 518-713.000.

GRAPHA-HOLDING AG.: *See*—
Boss, Heinz, 4,614,290, Cl. 227-1.000.

Graves, Brian J., to Emhart Industries, Inc. Fluid flow detector with adaptor. 4,614,122, Cl. 73-861.740.

Green, Robert G.; Browne, Mark A.; Deloughry, Richard J.; and Hill, Eric J., to BTR plc. System for the monitoring and control of flow of particulate material in impact treatment equipment. 4,614,100, Cl. 72-53.000.

Greene, Laverne; and Spector, George. Electrically and manually operated mirror. 4,614,404, Cl. 350-280.000.

Grelle, Peter F.; and Urs, Venkataramaraj S., to Olin Corporation. Plastic cartridge case. 4,614,157, Cl. 102-466.000.

Grier, Jack B.: *See*—
Bailey, Horace A.; and Grier, Jack B., 4,614,064, Cl. 51-420.000.

Grinboum, Zvi: *See*—
Zeadman, Zvi; Goldenberg, Carol; and Grinboum, Zvi, 4,614,328, Cl. 251-129.170.

Groo, Dora: *See*—
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.

Gros, Pierre: *See*—
Jansen, Franz; and Gros, Pierre, 4,614,650, Cl. 424-85.000.

Grover, Scott T. Work pants. 4,613,991, Cl. 2-23.000.

Growney, Lawrence J.: *See*—
Davis, Robert E.; Maio, Patrick S.; and Growney, Lawrence J., 4,614,297, Cl. 229-132.000.

Grubbs, Donald K., to Aluminum Company of America. Parallel purification of alumina with physical pretreatment. 4,614,641, Cl. 423-127.000.

Gruber, Arthur W., to BOC Group, Inc., The. Glass yarn filter for gas regulators. 4,614,529, Cl. 55-520.000.

Gschwind, Peter, to Vestol SA. Device for joining a pipe and a connection piece. 4,614,372, Cl. 285-356.000.

GTE Communications Systems Corp.: *See*—
Smith, Louis W.; and Csapo, John S., 4,614,842, Cl. 179-27.0FH.

GTE Products Corporation: *See*—
Meyer, Vincent D.; and Keeffe, William M., 4,614,890, Cl. 313-25.000.
Shaffer, John W.; and Sindlinger, Ronald E., 4,614,494, Cl. 431-362.000.

Guercio, James; Meyer, Ronald A.; and Sakamoto, Shiro, to Beckman Industrial Corporation. Interlocked push button switch assembly. 4,614,846, Cl. 200-5.00E.

Guglielmo, Alfred R.: *See*—
Lockerby, W. Lee; and Guglielmo, Alfred R., 4,614,006, Cl. 17-71.000.

Guilford Mills, Inc.: *See*—
Porat, Itzchak, 4,614,095, Cl. 66-207.000.

Guillet, James E., to Allied Corporation. Negative photoresists of α-chlorovinyl methyl ketone copolymers. 4,614,703, Cl. 430-771.000.

Guinard Centrifugation: *See*—
Antoine, Claude; and Zuckmeyer, Bruno, 4,614,447, Cl. 384-616.000.

Gullfiber AB: *See*—
Csiki, Kalman, 4,614,487, Cl. 425-112.000.

Guse, Rolf: *See*—
Gerundt, Sebastian; Guse, Rolf; Halterbeck, Walter; Hollenberg, Gunter; Maier, Gerhard; and Muller, Karl-Heinz, 4,614,969, Cl. 358-101.000.

Haack, Reimer: *See*—
Stahlherm, Dieter; Haack, Reimer; Stewen, Wilhelm; and Lukaszewicz, Helmut, 4,614,567, Cl. 201-1.000.

Haas, Georges: *See*—
Ilvespaa, Atso; and Haas, Georges, 4,614,745, Cl. 514-432.000.

Hadden, Sam: *See*—
Topp, Mark; and Hadden, Sam, 4,614,668, Cl. 427-66.000.

Hagenbuch, Leroy G. Apparatus and method for monitoring and controlling the volumetric loading of a truck body. 4,614,477, Cl. 414-786.000.

Hagiwara, Michiaki: *See*—
Masumoto, Tsuyoshi; Hamashima, Tatsuo; and Hagiwara, Michiaki, 4,614,221, Cl. 164-462.000.

Haines, Robert C.: *See*—
Curtis, Michael E.; and Haines, Robert C., 4,614,627, Cl. 264-46.600.

Hair, Thomas: *See*—
Baxter, Ivor R.; and Hair, Thomas, 4,614,426, Cl. 356-1.000.

Hakkaku, Kunio; Matsushita, Yoh; Tokumasu, Takahiko; and Yamamoto, Toshio, to Ricoh Company, Ltd. Transfer-type thermal printer. 4,614,949, Cl. 346-76.0PH.

Hall, Arthur, III, to General Motors Corporation. Steer drive for cross drive transmission. 4,614,131, Cl. 74-720.500.

Hall, Arthur, III, to General Motors Corporation. Single centerline cross drive steering transmission. 4,614,132, Cl. 74-720.500.

Halliburton Company: *See*—
Colle, Edward A., Jr.; George, Flint R.; and Yates, Donald N., Jr., 4,614,156, Cl. 102-312.000.

Halterbeck, Walter: *See*—
Gerundt, Sebastian; Guse, Rolf; Halterbeck, Walter; Hollenberg, Gunter; Maier, Gerhard; and Muller, Karl-Heinz, 4,614,969, Cl. 358-101.000.

Halvorsen, Robert M.; and Hurst, Jeffrey B., to Ex-Cell-O Corporation. Fuel distribution valve. 4,614,202, Cl. 137-118.000.

Hamada Printing Press Mfg. Co., Ltd.: *See*—
Shimizu, Shigeru, 4,614,155, Cl. 101-248.000.

Hamanaka, Ernest S., to Pfizer Inc. 2-dioxacycloalkylthiopenem derivatives. 4,614,737, Cl. 514-193.000.

Hamashima, Tatsuo: *See*—
Masumoto, Tsuyoshi; Hamashima, Tatsuo; and Hagiwara, Michiaki, 4,614,221, Cl. 164-462.000.

Hamert, Jean-Marie, to Societe de Dietrich & Cie. Thermal sensor for chemical reactor. 4,614,443, Cl. 374-163.000.

Hamilton, Harriet W.; Patt, William C.; and Trivedi, Bharat K., to Warner-Lambert Company. N^6-acenaphthyl adenosines and analogs thereof. 4,614,732, Cl. 514-46.000.

Hammond, Scott H.: *See*—
Battocletti, Frank E.; and Hammond, Scott H., 4,615,009, Cl. 364-483.000.

Hamori, Tamas: *See*—
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.

Hanabusa, Tetsuhiro: *See*—
Inui, Tsuneo; Tanaka, Atsuo; Hanabusa, Tetsuhiro; and Kubota, Harunori, 4,614,691, Cl. 428-623.000.

Hancz, Laszlo : *See*—
Harlt, Janos; and Hancz, Laszlo , 4,614,178, Cl. 128-24.00A.

Handte, Reinhard: *See*—
Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,614,535, Cl. 71-92.000.

Hannes, Hellmut: *See*—
Weber, Hans-Leo; Claussen, Uwe; and Hannes, Hellmut, 4,614,634, Cl. 264-341.000.

Hansa Medical Products, Inc.: *See*—
Blom, Eric D.; and Singer, Mark I., 4,614,516, Cl. 623-9.000.

Hanselman, James C.: *See*—
Adrian, Donald J.; Christensen, Lawrence E.; and Hanselman, James C., 4,614,918, Cl. 332-16.00R.

Hansen, Anders; and Jepsen, Bjarne, to Broen Armatur A/S. Cock or valve comprising a gear wheel transmission. 4,614,329, Cl. 251-248.000.

Hansen, Henning M.; Jacobsen, Hans E.; Lassithiotakis, Konstantin; and Nyrup, John, to Danfoss A/S. Electromagnetic flow meter. 4,614,121, Cl. 73-861.120.

Hansen, Kent G., to Canadian Fram Limited. Single solenoid control of sequential multiple actuators. 4,614,184, Cl. 123-571.000.

Hansen, Philip E.; Brange, Jens J. V.; and Havelund, Svend, to Novo Industri A/S. Stabilized insulin preparations and a process for preparation thereof. 4,614,730, Cl. 514-3.000.

Hanssler, Gerd: *See*—
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,614,532, Cl. 71-92.000.

Hansson, Leif T.: *See*—
Petersson, Bo A. O.; Hansson, Leif T.; and Samsioe, Per-Edward, 4,614,905, Cl. 320-18.000.

Hansz, Bernard: *See*—
Boncoeur, Marcel; Hansz, Bernard; and Lieven, Thierry, 4,614,637, Cl. 419-2.000.

Hara, Akio: *See*—
Kuroishi, Nobuhito; Osada, Mitsuo; and Hara, Akio, 4,614,638, Cl. 419-39.000.
Hara, Yasuhiko; Ohshima, Yoshimasa; Fushimi, Satoru; and Makihira, Hiroshi, to Hitachi Ltd. Method of detecting pattern defect and its apparataus. 4,614,430, Cl. 356-394.000.
Harada, Kazumasa: *See*—
Shimizu, Shigehisa; Suzuki, Chiaki; Harada, Kazumasa; and Maeda, Tomohisa, 4,614,019, Cl. 29-450.000.
Harada, Kuniyoshi; and Yamada, Yukifumi, to Aisin Seiki Company, Ltd. Spring coupler apparatus. 4,614,257, Cl. 192-8.00C.
Haraguchi, Hideaki, to Matsushita Electric Works, Ltd. Comb attachment for a hair clipper. 4,614,036, Cl. 30-200.000.
Hardison, John C. Liquid pumping system. 4,614,480, Cl. 417-199.00A.
Harer, Helmut: *See*—
Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, 4,614,887, Cl. 310-16o.000.
Harlt, Janos; and Hancz, Laszlo , to Orvosi Muszerszovetkezet. Automatic dose meter and control circuit arrangement. 4,614,178, Cl. 128-24.00A.
Harness, Ronald L.: *See*—
Walters, Paul W.; Raiche, H. Anthony; Harness, Ronald L.; and Quodala, Genaro M., 4,614,726, Cl. 502-41.000.
Harnisch, Horst, to Bayer Aktiengesellschaft. Fluorogenic phosphate esters of hydroxy-pyrene-sulfonic acids for fluorimetric determination of phosphatases. 4,614,713, Cl. 435-21.000.
Harris, Ronald P.; Holland, Lawrence R.; and Smith, Robbie E., to United States of America, National Aeronautics and Space Administration. High-temperature, high-pressure optical cell. 4,614,428, Cl. 356-246.000.
Hart, Steven C.: *See*—
Folkins, Jeffrey J.; Edmunds, Cyril G.; and Hart, Steven C., 4,614,165, Cl. 118-657.000.
Hartl, Walter, to International Standard Electric Corporation. Connecting element for chip carriers. 4,614,387, Cl. 339-17.0CF.
Hasegawa, Isao: *See*—
Sukenari, Akira; Hasegawa, Isao; and Ito, Yukio, 4,614,987, Cl. 360-93.000.
Hashimoto Denki Co., Ltd.: *See*—
Nagasawa, Kiyoshi; Kuroyanagi, Mitsuhiro; and Aizawa, Tadashi, 4,614,045, Cl. 34-34.000.
Hashimoto, Katsuhiko: *See*—
Fukasaku, Yoshinori; Hashimoto, Katsuhiko; and Noto, Kunihiro, 4,614,152, Cl. 98-2.000.
Hashimoto, Mitsuru: *See*—
Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, 4,614,682, Cl. 428-213.000.
Hashimoto, Takafumi; Ando, Yasuo; and Jinnai, Kenichiro, to Kabushiki Kaisha Meidensha. Metal-halogen secondary battery. 4,614,693, Cl. 429-72.000.
Hashimoto, Yoshiro: *See*—
Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, 4,614,996, Cl. 362-147.000.
Hashino, Tomiko; and Omura, Ichie, to Hashino Yakuhin, Ltd. Process for the preparation of salt-free pickled vegetables. 4,614,655, Cl. 426-49.000.
Hashino Yakuhin, Ltd.: *See*—
Hashino, Tomiko; and Omura, Ichie, 4,614,655, Cl. 426-49.000.
Haslanger, Martin F.: *See*—
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,614,825, Cl. 548-252.000.
Hata, Toyohiko: *See*—
Tsukuda, Takaaki; Hata, Toyohiko; and Fujisaki, Akira, 4,614,929, Cl. 335-284.000.
Hata, Yoshiaki; Matsumoto, Toshiaki; Tominaga, Shinji; Yamamoto, Koji; Yamashita, Maki; and Tanaka, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Camera. 4,614,417, Cl. 354-403.000.
Hata, Yoshitada; Katano, Kazuyuki; and Homma, Isao, to Hitachi, Ltd. Aircraft cleaning apparatus. 4,614,002, Cl. 15-53.00A.
Hattori, Sadami: *See*—
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kozo; and Hattori, Sadami, 4,614,880, Cl. 307-200.00A.
Hatzmann, Guenter: *See*—
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,614,604, Cl. 252-56.00S.
Haupt, Heinrich: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.
Havelund, Svend: *See*—
Hansen, Philip E.; Brange, Jens J. V.; and Havelund, Svend, 4,614,730, Cl. 514-3.000.
Hawkes, Ralph O. Horizontal belt filter with incremental belt advance. 4,614,583, Cl. 210-400.000.
Hawkins, Hugh M., to Kirlin, John J.; and Day, Wayne T. Load raising vehicle and method. 4,614,251, Cl. 182-63.000.
Hawrylo, Frank Z.: *See*—
Polansky, Carl; and Hawrylo, Frank Z., 4,614,292, Cl. 228-1.100.
Hayakawa, Toshiaki: *See*—
Sugimoto, Tadao; and Hayakawa, Toshiaki, 4,614,711, Cl. 430-567.000.
Hayashi, Asao, to Olympus Optical Co., Ltd. Method of detecting a focus condition of an imaging optical system by image sharpness and lateral shift techniques. 4,614,865, Cl. 250-201.000.
Hayashi, Hiroshi; Katoh, Kazunobu; and Yoshida, Takashi, to Fuji Photo Film Co., Ltd. Photographic support. 4,614,681, Cl. 428-201.000.
Hayashi, Kiyohide: *See*—
Sugiura, Saburo; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,614,159, Cl. 110-261.000.
Hayashi, Shoichiro: *See*—
Konai, Yutaka; Hayashi, Shoichiro; Kubota, Yoshikazu; and Kodama, Kouichi, 4,614,620, Cl. 260-397.250.
Hayashi, Tadayoshi; and Ushio, Hideaki, to Honda Giken Kogyo Kabushiki Kaisha. Cylinder head for internal combustion engine. 4,614,172, Cl. 123-188.00S.
Hayashi, Takehiko: *See*—
Takagi, Masayoshi; Hayashi, Takehiko; and Sakamoto, Fumio, 4,614,467, Cl. 409-199.000.
Hayashi, Yasuhiro: *See*—
Fujita, Munehisa; Hayashi, Yasuhiro; Ozawa, Takashi; and Ohki, Nobutaka, 4,614,707, Cl. 430-379.000.
Hayashima, Toshitaka: *See*—
Suzaki, Masayuki; Nishiwaki, Shoji; and Hayashima, Toshitaka, 4,614,448, Cl. 400-208.000.
Hayes, Russell E.: *See*—
Sheldon, Peter; and Hayes, Russell E., 4,614,564, Cl. 156-657.000.
Hegedus, Andreas G., to Tegal Corporation. Compound flow plasma reactor. 4,614,639, Cl. 422-186.050.
Heimann, Bruno: *See*—
Korfgen, Harald; Geipel, Werner; and Heimann, Bruno, 4,614,449, Cl. 401-287.000.
Heimann, Peter A.: *See*—
Feldman, Martin; Heimann, Peter A.; Johnson, William A.; Retajczyk, Theodore F., Jr.; and White, Donald L., 4,614,433, Cl. 356-401.000.
Heiser, Richard K., to Sundstrand Corporation. Actuator driver with open-circuit and stray ground protection. 4,614,992, Cl. 361-160.000.
Heismann, Richard A.; and Pendry, Warren W., to Outboard Marine Corporation. Tensioning control for flexible cable. 4,614,130, Cl. 74-501.00R.
Helde, Oscar, to Nymark, R. Paul; and Pettersen, Karl Johan. Conveyor system. 4,614,158, Cl. 104-172.00S.
Helene Curtis Industries, Inc.: *See*—
Hsiung, Du Y.; Branch, Billye J.; and Rathnam, Jayaseelan, 4,614,200, Cl. 132-7.000.
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, to BASF Aktiengesellschaft. Lubricants for shaping polyvinyl chloride, which contain esterified oligomeric polyhydric alcohols. 4,614,604, Cl. 252-56.00S.
Helliwell, John F.: *See*—
Machin, David; and Helliwell, John F., 4,614,606, Cl. 252-116.000.
Hemfort, Heinrich: *See*—
Zettier, Karl-Heinz; Bruning, Paul; Schmidt, Reinhard; and Hemfort, Heinrich, 4,614,598, Cl. 210-781.000.
Henmi, Kojiro; and Miyasaka, Eiji, to Dainippon Screen Manufacturing Co., Ltd. Sheet inserting guide. 4,614,334, Cl. 271-8.100.
Henning, Rainer: *See*—
Urbach, Hansjorg; Henning, Rainer; and Becker, Reinhard, 4,614,805, Cl. 548-427.000.
Herr-Voss Corporation: *See*—
Fornataro, Augustine A., 4,614,101, Cl. 72-160.000.
Herronen, John R.: *See*—
Bolle, Fred; Herronen, John R.; and Wright, Joseph M., 4,614,108, Cl. 72-446.000.
Hertenstein, Roland R.: *See*—
Fuchs, Gerhard; Hertenstein, Roland R.; and Quick, Hans G., 4,614,752, Cl. 521-44.500.
Hess, Roland H. P., to Dow Chemical Company, The. Hydroxypropyl methyl cellulose thickening agents for organic liquids. 4,614,545, Cl. 106-169.000.
Heston, David D.; and Lehmann, Randall E., to Texas Instruments Incorporated. Monolithic series feedback low noise FET amplifier. 4,614,915, Cl. 330-277.000.
Hetei, Marta: *See*—
Rajkai, Gabor; Szabo, Rozalia; Dohar, Istvan; Vinkovits, Sandor; Hetei, Marta; and Florian, Gyorgy, 4,615,027, Cl. 364-726.000.
Hettche, Albert: *See*—
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,614,604, Cl. 252-56.00S.
Hetzer, Nobert; and Sommerfeld, Wolfgang, to Esselte Pendaflex Corporation. Ink pot for felt pens for inscribing posters or the like. 4,614,163, Cl. 118-268.000.
Heusinkveld, Valerie F.: *See*—
Kraatz, Gary W.; Chavdarian, Charles G.; and Heusinkveld, Valerie F., 4,614,828, Cl. 558-203.000.
Hewlett-Packard Company: *See*—
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.
Vial, Harold W., 4,614,858, Cl. 219-230.000.
Heyman, Klas. Support structure. 4,614,460, Cl. 405-195.000.
Hickey, John S.; and Roemer, Peter B., to General Electric Company. Radially magnetized cylindrical magnet. 4,614,930, Cl. 335-302.000.

Higashiguchi, Teruaki: *See—*
Miyakawa, Nobuhiro; Yano, Koji; Yamamoto, Kazuo; Higashiguchi, Teruaki; and Kawakami, Yoshinobu, 4,614,698, Cl. 430-106.600.

Hill, Eric J.: *See—*
Green, Robert G.; Browne, Mark A.; Deloughry, Richard J.; and Hill, Eric J., 4,614,100, Cl. 72-53.000.

Hilti Aktiengesellschaft: *See—*
Mauritz, Bernd, 4,614,471, Cl. 411-21.000.

Hinchcliffe, Dennis; and Labbe, Francis A. M., to Molins, PLC. Filter cigarette manufacture. 4,614,198, Cl. 131-94.000.

Hinden, Milton. Resistance weld securement device. 4,614,855, Cl. 219-98.000.

Hines, John R.; Monroe, Raymond J.; and Ruppel, Danny R., to Cadillac Rubber & Plastics, Inc. Bearing seal assembly. 4,614,444, Cl. 384-138.000.

Hirai, Koichi; Uda, Taizo; and Nakamura, Yasuo, to Ube Industries, Ltd. Catalyst composition for producing ethylene glycol and process for producing the catalyst composition. 4,614,728, Cl. 502-244.000.

Hirano, Nariaki, to Nippon Electric Co., Ltd. Physical address developing unit. 4,615,006, Cl. 364-200.000.

Hirata, Toichi: *See—*
Tamura, Seiji; Ikeda, Toshimichi; and Hirata, Toichi, 4,614,475, Cl. 414-694.000.

Hirohashi, Kazutoshi: *See—*
Ishigaki, Yukinobu; and Hirohashi, Kazutoshi, 4,614,910, Cl. 329-50.000.

Hisao, Shibuya; and Tsunero, Yusa, to Kamui Company, Ltd. Apparatus for manufacturing baffles for shell and tube type heat exchangers. 4,614,105, Cl. 72-382.000.

Hitachi Chemical Company, Ltd.: *See—*
Nishizawa, Hiroshi; Kasai, Shozo; Okada, Yasunori; Osada, Yuichi; and Mukoyama, Yoshiyuki, 4,614,782, Cl. 525-424.000.

Hitachi Construction Machinery Company, Inc.: *See—*
Tamura, Seiji; Ikeda, Toshimichi; and Hirata, Toichi, 4,614,475, Cl. 414-694.000.

Hitachi Electronics Engineering Co., Ltd.: *See—*
Koizumi, Mitsuyoshi; Oshima, Yoshimasa; Akiyama, Nobuyuki; and Yachi, Toshiaki, 4,614,427, Cl. 356-237.000.

Hitachi, Ltd.: *See—*
Fujii, Hiroshi; and Shimonabe, Hideyuki, 4,615,000, Cl. 363-41.000.
Fukasaku, Yoshinori; Hashimoto, Katsuhiko; and Noto, Kunihiro, 4,614,152, Cl. 98-2.000.
Hara, Yasuhiko; Ohshima, Yoshimasa; Fushimi, Satoru; and Makihira, Hiroshi, 4,614,430, Cl. 356-394.000.
Hata, Yoshitada; Katano, Kazuyuki; and Homma, Isao, 4,614,002, Cl. 15-53.00A.
Ikenaga, Katsuzi; Takai, Masao; Nakashima, Nobuyuki; and Umemoto, Koji, 4,614,410, Cl. 350-507.000.
Izumida, Yukihiro, 4,614,894, Cl. 313-414.000.
Kajiyama, Hiroshi; Minemura, Tetsuro; Ando, Hisashi; and Konno, Kiyoshi, 4,614,692, Cl. 429-44.000.
Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, 4,614,934, Cl. 40-347.0DA.
Koizumi, Mitsuyoshi; Oshima, Yoshimasa; Akiyama, Nobuyuki; and Yachi, Toshiaki, 4,614,427, Cl. 356-237.000.
Komeyama, Yoshihiro, 4,614,431, Cl. 356-401.000.
Kuniyoshi, Shinji; Terasawa, Tsuneo; Kurosaki, Toshiei; Kawamura, Yoshio; Hosaka, Sumio; and Takanashi, Akihiro, 4,614,432, Cl. 356-401.000.
Maejima, Hideo; Katsura, Koyo; Kihara, Toshimasa; and Akao, Yasushi, 4,615,005, Cl. 364-200.000.
Matsuzawa, Toshiharu; Iwayanagi, Takao; Douta, Kikuo; Yanazawa, Hiroshi; Kohashi, Takahiro; and Nonogaki, Saburo, 4,614,706, Cl. 430-313.000.
Sato, Tetsuo, 4,614,863, Cl. 250-201.000.
Shirasawa, Hisato; Sengoku, Norio; and Ohki, Nobuaki, 4,614,559, Cl. 156-182.000.
Takagi, Michimasa; Kajiwara, Toshiyuki; and Sakanaka, Takao, 4,614,103, Cl. 72-242.000.

Hobbs, Arthur G., Jr.: *See—*
Proctor, Robert H.; Hobbs, Arthur G., Jr.; and Argyle, Charles S., 4,614,231, Cl. 165-153.000.

Hobgood, David F.: *See—*
White, Donnie R.; Hobgood, David F.; Swim, Larry E.; and Staley, Leo D., 4,614,661, Cl. 426-511.000.

Hobson, Roy B.: *See—*
Reilly, John T.; Hobson, Roy B.; and Abdey, Gordon J., 4,614,612, Cl. 252-541.000.

Hoechst Aktiengesellschaft: *See—*
Kachholz, Traudel; Scharf, Udo; and Schlingmann, Merten, 4,614,717, Cl. 435-69.000.
Kuch, Heinz; and Kruse, Hansjorg, 4,614,739, Cl. 514-212.000.
Pliefke, Engelbert, 4,614,570, Cl. 204-129.650.
Pliefke, Engelbert, 4,614,571, Cl. 204-129.750.
Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,614,535, Cl. 71-92.000.
Spietschka, Ernst; and Urban, Manfred, 4,614,803, Cl. 546-98.000.
Urbach, Hansjorg; Henning, Rainer; and Becker, Reinhard, 4,614,805, Cl. 548-427.000.

Hoepfner, Thomas L.; and Leistikow, Keith A. Grass collector blower. 4,614,080, Cl. 56-16.600.

Hofer, Bruce E., to Audio Precision, Inc. Low-distortion transformer-coupled circuit. 4,614,914, Cl. 330-149.000.

Hoffmann-La Roche Inc.: *See—*
Horecker, Bernard L., 4,614,731, Cl. 514-12.000.
Schmidt, Dieter; and Steffen, Hans, 4,614,723, Cl. 436-536.000.

Hofmann, Frieder, to Brunswick Corporation. Method and device for testing the permeability of membrane filters. 4,614,109, Cl. 73-38.000.

Holbrook, Michael T.; and Morris, Thomas E., to Dow Chemical Company, The. Liquid phase chlorination of chlorinated methanes. 4,614,572, Cl. 204-157.950.

Holbrook, Walter R.; Reynoids, Claude L., Jr.; Shimer, Julie A.; and Temkin, Henryk, to AT&T Bell Laboratories. Self-aligned rib-waveguide high power laser. 4,615,032, Cl. 372-45.000.

Holland, Lawrence R.: *See—*
Harris, Ronald P.; Holland, Lawrence R.; and Smith, Robbie E., 4,614,428, Cl. 356-246.000.

Hollenberg, Gunter: *See—*
Gerundt, Sebastian; Guse, Rolf; Halterbeck, Walter; Hollenberg, Gunter; Maier, Gerhard; and Muller, Karl-Heinz, 4,614,969, Cl. 358-101.000.

Holtschmidt, Ulrich: *See—*
Huettinger, Rudolf; and Holtschmidt, Ulrich, 4,614,622, Cl. 260-410.700.

Holzman, Thomas F.: *See—*
Baldwin, Thomas O.; Holzman, Thomas F.; Satoh, Paul S.; and Yein, Frederick S., 4,614,712, Cl. 435-4.000.

Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Low consistency, one-part silicone elastomers. 4,614,760, Cl. 524-860.000.

Homma, Isao: *See—*
Hata, Yoshitada; Katano, Kazuyuki; and Homma, Isao, 4,614,002, Cl. 15-53.00A.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hayashi, Tadayoshi; and Ushio, Hideaki, 4,614,172, Cl. 123-188.00S.
Morita, Isamu; Nozawa, Yasuji; and Maru, Hideki, 4,614,255, Cl. 188-315.000.
Sano, Shoichi; Furukawa, Yoshimi; and Tashiro, Yutaka, 4,614,351, Cl. 280-91.000.
Yamanaka, Isao, 4,614,249, Cl. 180-312.000.

Honeycutt, Thomas E.; and Roberts, Thomas G., to United States of America, Army. Inherently boresighted laser weapon alignment subsystem. 4,614,913, Cl. 330-4.300.

Honeywell Inc.: *See—*
Arch, David K.; Scott, M. Walter; Smith, Darryl L.; and Weisberg, Leonard R., 4,614,957, Cl. 357-16.000.
Khan, M. Asif; Schulze, Richard G.; and Skogman, Richard A., 4,614,961, Cl. 357-30.000.

Honeywell Information Systems Inc.: *See—*
Bradley, John J.; Stoffers, Brian L.; Staplin, Theodore R., Jr.; and Widen, Melinda A., 4,615,016, Cl. 364-756.000.

Honjo, Yoshiaki: *See—*
Takano, Akira; Mizuno, Yutaka; Ishikawa, Hiroyuki; and Honjo, Yoshiaki, 4,614,384, Cl. 312-281.000.

Hopkins, Thomas M., II: *See—*
Lampton, Robert D., Jr.; and Hopkins, Thomas M., II, 4,614,644, Cl. 423-226.000.

Horecker, Bernard L., to Hoffmann-La Roche Inc. Peptide having immunopotentiating activity similar to thymosin alpha$_1$. 4,614,731, Cl. 514-12.000.

Horenz, Peter G., to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Microscope with correlatable fixation target. 4,614,411, Cl. 350-516.000.

Hori, Hitoshi: *See—*
Mori, Hirofumi; and Hori, Hitoshi, 4,614,701, Cl. 430-175.000.

Hori, Katsuyoshi; Kagawa, Takeshi; Kusano, Kazuki; and Takuwa, Toshiaki, to Babcock-Hitachi Kabushiki Kaisha. Hot-wire TIG welding apparatus. 4,614,856, Cl. 219-130.210.

Hori, Teruo; Nakabayashi, Masamitsu; and Furukawa, Yuzo, to Takeda Chemical Industries, Ltd. Resin from saponified ethylene-vinyl acetate copolymers, production and use thereof. 4,614,781, Cl. 525-330.600.

Horst, Clemens L.: *See—*
Kalsi, Manmohan S.; and Horst, Clemens L., 4,614,330, Cl. 251-283.000.

Horvath, Janos: *See—*
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, 4,614,540, Cl. 75-59.130.

Hosaka, Sumio: *See—*
Kuniyoshi, Shinji; Terasawa, Tsuneo; Kurosaki, Toshiei; Kawamura, Yoshio; Hosaka, Sumio; and Takanashi, Akihiro, 4,614,432, Cl. 356-401.000.

Hoshino, Shigeru; and Miyata, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Apparatus for detecting angle and angular velocity of rotation member and method of assembling it. 4,614,869, Cl. 250-231.0SE.

Hosoya, Fumio, to Hosoya Pyrotechnics Co., Ltd. Smoke emitting game ball. 4,614,340, Cl. 273-60.00B.

Hosoya Pyrotechnics Co., Ltd.: *See—*
Hosoya, Fumio, 4,614,340, Cl. 273-60.00B.

Hotta, Shintaro: *See—*
Sagara, Iwao; Nakagawa, Koichi; and Hotta, Shintaro, 4,614,144, Cl. 84-1.280.

Hotta, Yoshio, to Canon Kabushiki Kaisha. Electrooptical device having fixed translucent indicia. 4,614,407, Cl. 350-339.00R.

Hsiung, Du Y.; Branch, Billye J.; and Rathnam, Jayaseelan, to Helene Curtis Industries, Inc. Hair treating method and composition. 4,614,200, Cl. 132-7.000.

Hsu, Michael S.; and Wilson, Charles F., to Massachusetts Institute of Technology. Solid electrolyte structure and method for forming. 4,614,628, Cl. 264-61.000.

Hu, Kwok D.; and Bloemer, Robert W., to Texas Instruments Incorporated. Ring transmission network for interfacing control functions between master and slave devices. 4,615,029, Cl. 370-89.000.

Huber, Alois: *See—*
Gerrits, Wilhelmus P. M.; and Huber, Alois, 4,614,315, Cl. 242-200.000.

Hudelmaier, Gerhard. Device for sealing a concrete pump. 4,614,483, Cl. 417-517.000.

Hudgins, Walter R., Jr., to AT&T Bell Laboratories. Queuing arrangement for initiating execution of multistage transactions. 4,615,001, Cl. 364-200.000.

Huebner, Dietmar: *See—*
Dietze, Herbert; Huebner, Dietmar; Wagner, Friedhelm; Duebon, Manfred; and Wenz, Gerd, 4,614,269, Cl. 206-387.000.

Huels Aktiengesellschaft: *See—*
Olbrich, Jurgen; and Dorffel, Jorg, 4,614,808, Cl. 549-236.000.

Huettinger, Rudolf; and Holtschmidt, Ulrich, to Th. Goldschmidt AG. Polyoxyalkylene ethers of glycerin or 1,2-propanediol, esterified with fatty acid and/or isostearic acid, their synthesis and use as thickening or solubilizing agents. 4,614,622, Cl. 260-410.700.

Huggins, Ronald B.: *See—*
Wright, James R.; and Huggins, Ronald B., 4,614,398, Cl. 339-143.00R.

Hughes Aircraft Company: *See—*
Reed, Elmer E.; and Manoly, Arthur E., 4,614,926, Cl. 333-244.000.

Hughes, Chesley P. Cutter having removable cutting blades. 4,614,463, Cl. 407-49.000.

Hughes, Joseph V.; Scolnick, Edward M.; and Tomassini, Joanne E., to Merck & Co., Inc. Hepatitis A—subunit antigen. 4,614,793, Cl. 530-350.000.

Huhn, Helmut; and Karstens, Werner, to Wolff Walsrode Aktiengesellschaft. High molecular weight water-swellable substances. 4,614,780, Cl. 525-329.100.

Huliba, David A.: *See—*
Katerberg, James A.; Craig, Evan L.; and Huliba, David A., 4,614,948, Cl. 346-75.000.

Hulseweh, Terry S., to Motorola, Inc. Pillar via process. 4,614,021, Cl. 29-590.000.

Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., to Sunstrand Data Control, Inc. Borehole survey system and method of determining the difference in borehole azimuth at successive points. 4,614,040, Cl. 33-312.000.

Hung, Paul L. K.; and Lavach, Mark L., to M&T Chemicals Inc. Stable UV curable compositions comprising triphenyl phosphite for forming solder mask coatings of high cure depth. 4,614,704, Cl. 430-284.000.

Hurst, Jeffrey B.: *See—*
Halvorsen, Robert M.; and Hurst, Jeffrey B., 4,614,202, Cl. 137-118.000.

Huston, Alan L.; and Moerner, William E., to International Business Machines Corporation. Phase sensitive ultrasonic modulation method for the detection of strain-sensitive spectral features. 4,614,116, Cl. 73-657.000.

Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, to Owens-Corning Fiberglas Corporation. Melt processable optically anisotropic polyesters. 4,614,790, Cl. 528-191.000.

Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, to Owens-Corning Fiberglas Corporation. Melt processable optically anisotropic polyesters. 4,614,791, Cl. 528-193.000.

Hyatt, Gilbert P. Illumination signal processing system. 4,614,415, Cl. 354-354.000.

Hydra Systems International, Inc.: *See—*
Stevens, Frederick G., 4,614,050, Cl. 42-1.010.

I.E.S.S. C.N.R.: *See—*
Roveda, Riccardo; Di Gregorio, Carlo; De Gasperis, Paolo; and Miccoli, Giuseppe, 4,614,923, Cl. 333-147.000.

Ibaraki, Hirozi, to Victor Company of Japan, Ltd. Picture generating apparatus for a rotary recording medium reproducing apparatus. 4,614,982, Cl. 358-342.000.

Ibbott, Jack K., to Fanuc Ltd. Battery and method of producing same. 4,614,695, Cl. 429-127.000.

Ibello, Alfredo, deceased; by Ibello, Silvio, heir; by Ibello, Emma, heir; and by Ibello, Clelia, heir. Leather processing. 4,614,520, Cl. 8-436.000.

Ibello, Clelia, heir: *See—*
Ibello, Alfredo, deceased; Ibello, Silvio, heir; Ibello, Emma, heir; and Ibello, Clelia, heir, 4,614,520, Cl. 8-436.000.

Ibello, Emma, heir: *See—*
Ibello, Alfredo, deceased; Ibello, Silvio, heir; Ibello, Emma, heir; and Ibello, Clelia, heir, 4,614,520, Cl. 8-436.000.

Ibello, Silvio, heir: *See—*
Ibello, Alfredo, deceased; Ibello, Silvio, heir; Ibello, Emma, heir; and Ibello, Clelia, heir, 4,614,520, Cl. 8-436.000.

IBM: *See—*
Linsker, Ralph, 4,615,011, Cl. 364-491.000.

Ida, Keizo; and Goto, Akihiko, to Toppan Printing Co., Ltd.; and Kawashima Packaging Machinery Ltd. Automatic packaging system. 4,614,079, Cl. 53-563.000.

Ide, Toshiaki: *See—*
Nishimatsu, Masaharu; Ide, Toshiaki; Saito, Yoshiaki; and Kubota, Yuichi, 4,614,687, Cl. 428-329.000.

Idex (Jersey) Limited: *See—*
Frampton, Jeffery A.; and Bartman, Nicholas, 4,614,376, Cl. 296-224.000.

Idland, Kristoffer. Support shoe. 4,614,070, Cl. 52-296.000.

Ihara, Kiyohiko; and Nakagawa, Tsuneo, to Daikin Industries; and Kabushiki Kaisha Daikyo Gomu Suki. Laminated rubber stopper. 4,614,276, Cl. 215-364.000.

Iida, Moriya: *See—*
Kezuka, Seiju; Yoshimura, Tsuneo; Kato, Tadayoshi; and Iida, Moriya, 4,614,632, Cl. 264-280.000.

Ikeda, Kazuo; Sayano, Akio; and Tanaka, Shun-ichiro, to Kabushiki Kaisha Toshiba. Non-oxide-series-sintered ceramic body and method for forming conducting film on the surface of non-oxide-series-sintered ceramic body. 4,614,689, Cl. 428-409.000.

Ikeda, Tetsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing machine and method of controlling the same. 4,614,243, Cl. 177-25.000.

Ikeda, Toshimichi: *See—*
Tamura, Seiji; Ikeda, Toshimichi; and Hirata, Toichi, 4,614,475, Cl. 414-694.000.

Ikegami, Takashi; and Mori, Masakazu, to Mitsubishi Denki Kabushiki Kaisha. Charging dynamoelectric machine having reduced noise output. 4,614,889, Cl. 310-263.000.

Ikenaga, Katsuzi; Takai, Masao; Nakashima, Nobuyuki; and Umemoto, Koji, to Hitachi, Ltd. Ultrasonic microscope with optical microscope incorporated therein. 4,614,410, Cl. 350-507.000.

Ilan, Amiram B.: *See—*
Juda, Walter; and Ilan, Amiram B., 4,614,575, Cl. 204-265.000.

Ilvespaa, Atso; and Haas, Georges, to Ciba-Geigy Corporation. Antiallergic 3-(carboxycarbonyl)amino benzothiopyran-4-one derivatives, compositions, and method of use therefor. 4,614,745, Cl. 514-432.000.

IMA - Industria Macchine Automatiche SpA: *See—*
Argazzi, Ivo, 4,614,073, Cl. 53-54.000.

Imabeppu, Shinichi: *See—*
Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, 4,614,996, Cl. 362-147.000.

Imran, Mir; Bach, Stanley M., Jr.; and Kolenik, Steve A., to Mirowski, Mieczyslaw. Implantable cardiac defibrillator employing bipolar sensing and telemetry means. 4,614,192, Cl. 128-419.00D.

Inaba, Takihiro: *See—*
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, 4,614,819, Cl. 540-222.000.

Inada, Hiroshi; Nomura, Tadashi; and Shimonou, Shigeru, to NEC Corporation. Beam access apparatus for optical disc system. 4,615,023, Cl. 369-32.000.

Inamasu, Sachiko: *See—*
Seino, Hajime; Uchibori, Tsuyoshi; Inamasu, Sachiko; and Nishitani, Toshiyuki, 4,614,718, Cl. 435-72.000.

Industrie Pirelli S.p.A.: *See—*
Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, 4,614,509, Cl. 474-205.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Bonci, Franco, 4,615,019, Cl. 364-900.000.
Chelin, Cesare, 4,614,394, Cl. 339-97.00P.

Ingeniorsfirman Petrokraft AB: *See—*
Olsson, Sten Y., 4,614,492, Cl. 431-284.000.

Ingwersen, Peter, to Molex Incorporated. Apparatus for providing commoning connectors. 4,614,143, Cl. 83-622.000.

Innes, John G., to International Business Machines Corp. Concurrent multi-lingual use in data processing system. 4,615,002, Cl. 364-200.000.

Inoue, Hiromichi; Saito, Shinichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, to Chisso Corporation. Liquid crystalline biphenyl derivatives and mixtures thereof. 4,614,609, Cl. 252-299.660.

Instrumentverken AB: *See—*
Sletmo, Lasse, 4,614,112, Cl. 73-178.00R.

Intellicard International, Inc.: *See—*
Pavlov, Leonidas P.; and Aba-Jbara, Nabil M., 4,614,861, Cl. 235-380.000.

Intermedicat GmbH: *See—*
Rath, Dieter; and Seeck, Peter, 4,614,590, Cl. 210-637.000.

International Business Machines Corporation: *See—*
Brosch, Rudolf; Keinert, Joachim; Klink, Erich; and Wernicke, Friedrich C., 4,614,885, Cl. 307-513.000.
Chevillat, Pierre R.; Kaeser, Hans P.; Maiwald, Dietrich G. U.; and Ungerboeck, Gottfried, 4,615,004, Cl. 364-200.000.
Davis, James W.; and Jones, Frank D., 4,615,010, Cl. 364-491.000.
Economy, James; and Zachariades, Anagnostis E., 4,614,629, Cl. 264-176.100.
Finlay, David E.; Norgren, Kent S.; and Shook, Frankie S., 4,615,017, Cl. 364-900.000.
Huston, Alan L.; and Moerner, William E., 4,614,116, Cl. 73-657.000.
Innes, John G., 4,615,002, Cl. 364-200.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,614,610, Cl. 252-522.00R.
Sprecker, Mark A., 4,614,611, Cl. 252-522.00R.
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,614,831, Cl. 560-126.000.
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,614,299, Cl. 239-6.000.

International Standard Electric Corporation: *See—*
Bienstman, Luc A.; and Dobosch, Wlodimir J., 4,614,840, Cl. 179-7.10R.
Eales, Brian A.; Bricheno, Terry; Leggett, Norman D.; and Ashton, John E. U., 4,615,031, Cl. 372-36.000.

Hartl, Walter, 4,614,387, Cl. 339-17.0CF.

Inui, Tsuneo; Tanaka, Atsuo; Hanabusa, Tetsuhiro; and Kubota, Harunori, to Toyo Kohan Co., Ltd. Method for production of metal sheet covered with polyester resin film. 4,614,691, Cl. 428-623.000.

Inukai, Takashi: *See*—
Inoue, Hironichi; Saito, Shinichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, 4,614,609, Cl. 252-299.660.

Ionics, Incorporated: *See*—
Goldstein, Jonathan M., 4,614,576, Cl. 204-299.00R.

Isermann, Heinrich: *See*—
Sobotta, Reinhard; and Isermann, Heinrich, 4,614,422, Cl. 355-29.000.

Ishida, Hiroshi: *See*—
Matsushita, Kenyo; and Ishida, Hiroshi, 4,614,852, Cl. 219-10.49R.

Ishida, Yoshihiko: *See*—
Tsuno, Nobuo; and Ishida, Yoshihiko, 4,614,453, Cl. 403-30.000.

Ishigaki, Yukinobu; and Hirohashi, Kazutoshi, to Victor Company of Japan, Ltd. Quarternary differential PSK demodulator. 4,614,910, Cl. 329-50.000.

Ishii, Hiroyuki, to Sugatsune Kogyo Co., Ltd. Free stop retainer. 4,614,273, Cl. 211-183.000.

Ishikawa, Hiroyuki: *See*—
Takano, Akira; Mizuno, Yutaka; Ishikawa, Hiroyuki; and Honjo, Yoshiaki, 4,614,384, Cl. 312-281.000.

Ishikawa, Nobuo; Takaoka, Akio; Isono, Takashi; Motoyoshi, Masatoshi; and Kojima, Kazuhiro, to S.D.S. Biotech K.K. Fluorinated isophthalonitrile compound and nonmedical fungicide containing the same. 4,614,742, Cl. 514-237.000.

Ishino, Katsuya, to Yamaha Hatsudoki Kabushiki Kaisha. Transmission chain adjuster for motorcycles. 4,614,507, Cl. 474-101.000.

Ishizaki, Akira; Kawabata, Takashi; and Matsumura, Susumu, to Canon Kabushiki Kaisha. Distance detection apparatus. 4,614,418, Cl. 354-407.000.

Isogai, Masaki: *See*—
Kawahara, Atsushi; Ota, Tadashi; Kuroiwa, Toshihisa; Isogai, Masaki; Takatsu, Norihiko; and Kawamura, Koichiro, 4,614,977, Cl. 358-260.000.

Isono, Takashi: *See*—
Ishikawa, Nobuo; Takaoka, Akio; Isono, Takashi; Motoyoshi, Masatoshi; and Kojima, Kazuhiro, 4,614,742, Cl. 514-237.000.

Itani, Abdallah M.; and Roberts, Victor D., to General Electric Company. Electronic ballast with low frequency AC to AC converter. 4,614,898, Cl. 315-224.000.

Itano, Kiyoshi: *See*—
Yoshida, Masanobu; and Itano, Kiyoshi, 4,614,881, Cl. 307-219.000.
Yoshida, Masanobu; and Itano, Kiyoshi, 4,615,021, Cl. 365-189.000.

Ito, Leonard N., to Gates Rubber Company, The. Inflatable unitary packer element having elastic recovery. 4,614,346, Cl. 277-34.000.

Ito, Masaaki: *See*—
Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, 4,614,725, Cl. 501-136.000.

Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, to CKD Corporation; Sumitomo Electric; and Tokai Electric Wire Company Limited. Stripping device for stripping coated wire. 4,614,135, Cl. 81-9.510.

Ito, Tukasa; and Miyazaki, Noriyuki, to Sanyo Electric Co., Ltd. Negative electrode plate for alkaline storage cells of sealed type. 4,614,696, Cl. 429-222.000.

Ito, Yoshio, to Canon Kabushiki Kaisha. Recording apparatus capable of precisely positioning a recording sheet. 4,614,950, Cl. 346-76.0PH.

Ito, Yukio: *See*—
Sukenari, Akira; Hasegawa, Isao; and Ito, Yukio, 4,614,987, Cl. 360-93.000.

Itou, Yoshitaka, to Daido Concrete Kogyo Kabushiki Kaisha. Rotation device for a foundation pile. 4,614,462, Cl. 405-232.000.

ITT Industries, Inc.: *See*—
Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, 4,614,903, Cl. 318-443.000.
Schneider, Theodor; and Schubert, Karl-Friedrich, 4,614,886, Cl. 310-83.000.

Ivey, H. Grady: *See*—
Strickland, James K.; and Ivey, H. Grady, 4,614,326, Cl. 249-180.000.

Iwasaki, Takao: *See*—
Yamashita, Kiichi; Tanizawa, Junpei; and Iwasaki, Takao, 4,614,324, Cl. 249-11.000.

Iwatsu Electric Co., Ltd.: *See*—
Saito, Kimiharu; and Akizuki, Osamu, 4,614,895, Cl. 313-429.000.

Iwayanagi, Takao: *See*—
Matsuzawa, Toshiharu; Iwayanagi, Takao; Douta, Kikuo; Yanazawa, Hiroshi; Kohashi, Takahiro; and Nonogaki, Saburo, 4,614,706, Cl. 430-313.000.

Izumida, Yukihiro, to Hitachi Ltd. Electron gun for color picture tube. 4,614,894, Cl. 313-414.000.

Izumiya, Shunzo: *See*—
Obara, Haruki; and Izumiya, Shunzo, 4,614,854, Cl. 219-69.00C.

Jackman, Dennis E., to Mobay Chemical Corporation. Catalytic oxidation of 3,3-dimethyl-2-hydroxybutyric acid to 2-oxo acid and preparation of 4-amino-6-tert.-butyl-3-thio-1,2,4-triazine-5(4-H)-one. 4,614,822, Cl. 544-182.000.

Jacobsen, Hans E.: *See*—
Hansen, Henning M.; Jacobsen, Hans E.; Lassithiotakis, Konstantin; and Nyrup, John, 4,614,121, Cl. 73-861.120.

Jaeckle, Thomas H., to Southwest Research Institute. Micropower DC voltage indicator. 4,614,940, Cl. 340-636.000.

James, Rex I.: *See*—
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.

Jansen, Franz; and Gros, Pierre, to Sanofi. Cytotoxic composition including at least an immunotoxine and an amine. 4,614,650, Cl. 424-85.000.

Janssens, Wilhelmus: *See*—
Timmerman, Daniel M.; Priem, Jan J.; and Janssens, Wilhelmus, 4,614,708, Cl. 430-517.000.

Japan Tobacco, Inc.: *See*—
Nagata, Tomizou; and Kobayashi, Kazutaka, 4,614,263, Cl. 198-419.000.

Jarvfalt, Staffan, to Telefonaktiebolaget LM Ericsson. Apparatus for identifying digital multi-frequency signals. 4,614,909, Cl. 328-140.000.

Jarvis, Allan P., Jr.; and Kosowsky, David I., to Damon Biotech, Inc. Interferon epsilon. 4,614,651, Cl. 424-85.000.

Jarvis, Kevin M., to Singer Company, The. Raster-scan/calligraphic combined display system for high speed processing of flight simulation data. 4,614,941, Cl. 340-747.000.

Jeffrey, Paul W.; Sulzer, John; and Ashley, Peter J., to Alcan International Limited. Aluminum alloy can stock process of manufacture. 4,614,224, Cl. 164-476.000.

Jeol Ltd.: *See*—
Nagayama, Kuniaki, 4,614,907, Cl. 324-312.000.

Jepsen, Bjarne: *See*—
Hansen, Anders; and Jepsen, Bjarne, 4,614,329, Cl. 251-248.000.

Jessup, Frank L. Closure retention apparatus for automatic doors. 4,614,902, Cl. 318-282.000.

Jha, Mahesh C.: *See*—
Duyvesteyn, Willem P. C.; and Jha, Mahesh C., 4,614,543, Cl. 75-101.00R.

Jinnai, Kenichiro: *See*—
Hashimoto, Takafumi; Ando, Yasuo; and Jinnai, Kenichiro, 4,614,693, Cl. 429-72.000.

Johansson, Johan I.: *See*—
Reinhall, Rolf; and Johansson, Johan I., 4,614,304, Cl. 241-28.000.

John, Tom T., to Molecular Technology Corporation. Air survival unit. 4,614,186, Cl. 128-201.250.

John Wyeth & Brother Ltd.: *See*—
Rule, Arthur W. T., 4,614,663, Cl. 426-601.000.

John Zink Company: *See*—
Beckering, Jacobus J.; Lehnerd, Alvin P.; and Zoberis, Walter B., 4,614,859, Cl. 219-312.000.

Johnson, Elwin L.: *See*—
Carson, Kent R.; Luttmer, Joseph D.; Williams, Charles E.; McKee, William R.; Tso, Stephen T.; and Johnson, Elwin L., 4,614,835, Cl. 136-250.000.

Johnson & Johnson: *See*—
Easton, Ian A.; and Gorham, Stephen D., 4,614,794, Cl. 530-356.000.

Johnson & Johnson Products, Inc.: *See*—
McCracken, Robert W.; and Baesler, Linda A., 4,614,183, Cl. 128-132.00R.

Johnson, Richard W., to United States of America, Air Force. Atmospheric contrast transmittance monitor. 4,614,429, Cl. 356-343.000.

Johnson, Russell W.: *See*—
Lambert, Susan L.; Lawson, Randy J.; Johnson, Russell W.; and Gilson, Jean-Pierre, 4,614,834, Cl. 585-419.000.

Johnson, William A.: *See*—
Feldman, Martin; Heimann, Peter A.; Johnson, William A.; Retajczyk, Theodore F., Jr.; and White, Donald L., 4,614,433, Cl. 356-401.000.

Jones, Everett E., to Boeing Company, The. Magnetic tool changer. 4,614,137, Cl. 82-205.000.

Jones, Frank D.: *See*—
Davis, James W.; and Jones, Frank D., 4,615,010, Cl. 364-491.000.

Jones, Howard: *See*—
Loev, Bernard; Jones, Howard; and Chan, Wan-kit, 4,614,747, Cl. 514-529.000.

Jones, Robert F., to B. F. Goodrich Company, The. Tires building machine with rigid radially expansible drum. 4,614,562, Cl. 156-420.000.

Jones, W. Kinzy; and Weinberg, Alvin H., to Cordis Corporation. Implantable pulse generator having a single printed circuit board for carrying integrated circuit chips thereon with chip carrier means. 4,614,194, Cl. 128-419.00P.

Jordan, William H.: *See*—
Kullman, Uri; and Jordan, William H., 4,614,901, Cl. 318-99.000.

Jorgensen, Sven E., to SRS Water Research Corporation AB. Method to purify water. 4,614,591, Cl. 210-669.000.

Josef Feller Gesellschaft m.b.H.: *See*—
Kamitz, Herbert; and Simon, Franz, 4,614,924, Cl. 333-167.000.

Josef Gartner & Co.: *See*—
Gartner, Fritz, 4,614,370, Cl. 285-150.000.

Josefsberg, Yekutiel: *See*—
Zelitzki, Michael; and Josefsberg, Yekutiel, 4,614,917, Cl. 331-1.00A.

Josephs, Mark A.; Milikovsky, Roman; Penird, Carl W.; and Rehkopf, Charles H., to North American Philips Consumer Electronics Corp. Getter and contact assembly for a cathode ray tube. 4,614,896, Cl. 313-481.000.

Jouquey, Simone: *See*—
Delevallee, Francoise; Deraedt, Roger; and Jouquey, Simone, 4,614,736, Cl. 514-179.000.

Juda, Walter; and Ilan, Amiram B., to Prototech Company. Polymeric hydrogel-containing gas diffusion electrodes and methods of using the same in electrochemical systems. 4,614,575, Cl. 204-265.000.

Julius Blum Gesellschaft m.b.H.: *See*—
Blum, Dietmar, 4,614,012, Cl. 29-33.00K.

Juravic, Davor, to Star-Kist Foods, Inc. Simultaneous extrusion of multiple streams of a fibrous food product. 4,614,489, Cl. 425-376.00R.

Jurgens, Rainer; and Biehl, Johann, to Norton Christensen, Inc. Device for delivering flowable material. 4,614,232, Cl. 166-105.500.

K.T. Mfg. Co., Ltd.: *See*—
Muto, Yasutami; and Kohzuki, Kiyoshi, 4,614,077, Cl. 53-490.000.

Kaar, Richard A. Seam lock spreader mounted on lock-seam machine base. 4,614,102, Cl. 72-178.000.

Kabushiki Kaisha Daikin Seisakusho: *See*—
Fukunaga, Takao, 4,614,258, Cl. 192-0.052.
Takeuchi, Hiroshi, 4,614,261, Cl. 192-106.200.

Kabushiki Kaisha Daikyo Gomu Suki: *See*—
Ihara, Kiyohiko; and Nakagawa, Tsuneo, 4,614,276, Cl. 215-364.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Ikeda, Tetsuo, 4,614,243, Cl. 177-25.000.
Konishi, Satoshi, 4,614,262, Cl. 193-23.000.

Kabushiki Kaisha Itoh Seitetsusho: *See*—
Tabuchi, Seigo, 4,614,495, Cl. 432-164.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Zenno, Yoshizumi, 4,614,275, Cl. 212-198.000.

Kabushiki Kaisha Kokusai Technicals: *See*—
Kobayashi, Shozaburo, 4,614,438, Cl. 366-132.000.

Kabushiki Kaisha Meidensha: *See*—
Hashimoto, Takafumi; Ando, Yasuo; and Jinnai, Kenichiro, 4,614,693, Cl. 429-72.000.

Kabushiki Kaisha Okawara Seisakusho: *See*—
Furuya, Inosuke; and Yamazaki, Hideo, 4,614,665, Cl. 426-634.000.

Kabushiki Kaisha Toshiba: *See*—
Ikeda, Kazuo; Sayano, Akio; and Tanaka, Shun-ichiro, 4,614,689, Cl. 428-409.000.
Kawano, Mitsumo, 4,614,911, Cl. 329-101.000.
Kuwahata, Takao; Manabe, Sohei; Gonpei, Katsuhiro; and Nakabayashi, Masatoki, 4,614,891, Cl. 313-386.000.
Onodera, Toshihiro; Tanaka, Shigeru; and Matsumoto, Sunao, 4,614,999, Cl. 363-28.000.
Sato, Minoru, 4,614,196, Cl. 128-660.000.

Kachholz, Traudel; Scharf, Udo; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Process for cultivation of organisms wherein a uniform protein from microorganisms is enzymatically degraded. 4,614,717, Cl. 435-69.000.

Kaczeus, Steven; and Ngo, Long V., to Seagate Technology. Helical band drive for disc storage apparatus. 4,614,989, Cl. 360-106.000.

Kadowaki, Takashi: *See*—
Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,614,710, Cl. 430-549.000.

Kaeser, Hans P.: *See*—
Chevillat, Pierre R.; Kaeser, Hans P.; Maiwald, Dietrich G. U.; and Ungerboeck, Gottfried, 4,615,004, Cl. 364-200.000.

Kafri, Oded; and Livnat, Aminadav, to State of Israel, Atomic Energy Commission, Nuclear Research Center Negev, The. Night sight with light diffraction pattern. 4,614,039, Cl. 33-241.000.

Kagawa, Takeshi: *See*—
Hori, Katsuyoshi; Kagawa, Takeshi; Kusano, Kazuki; and Takuwa, Toshiaki, 4,614,856, Cl. 219-130.210.

Kaite, Osamu, to Sanyo Electric Co., Ltd. Focus area change circuit. 4,614,975, Cl. 358-227.000.

Kajitani, Yukimasa: *See*—
Teshima, Kiyomi; Kajitani, Yukimasa; Takeya, Kazuo; and Miyagawa, Takuya, 4,614,083, Cl. 60-39.530.

Kajiura, Hirokazu; Oda, Hidekuni; and Minami, Syuji. Random copolymer. 4,614,778, Cl. 526-281.000.

Kajiwara, Toshiyuki: *See*—
Takagi, Michimasa; Kajiwara, Toshiyuki; and Sakanaka, Takao, 4,614,103, Cl. 72-242.000.

Kajiyama, Hiroshi; Minemura, Tetsuro; Ando, Hisashi; and Konno, Kiyoshi, to Hitachi, Ltd. Fuel cell electrode, process for producing the same and fuel cell using the same. 4,614,692, Cl. 429-44.000.

Kakade, Madhu, to Cargill, Incorporated. Milk replacer and method of feeding. 4,614,653, Cl. 426-2.000.

Kakihana, Kazumasa; and Nishiwaki, Hiroshi, to Techno Roll Co., Ltd. Covering fabric for a damping roller of an offset printing machine. 4,614,094, Cl. 66-170.000.

Kakinaka, Shoichiro, to Kasuga Denki Co., Ltd. Yarn storage and delivery apparatus. 4,614,311, Cl. 242-47.010.

Kakinami, Toshiaki; and Yasuda, Tomio, to Aisin Seiki Kabushiki Kaisha. Motor-driven power steering system having a stable output torque. 4,614,248, Cl. 180-79.100.

Kalsi, Manmohan S.; and Horst, Clemens L., to Empresas Lanzagorta, S.A. de C.V. Non-locking tapered plug valve. 4,614,330, Cl. 251-283.000.

Kalvoda, Jaroslav: *See*—
Ernest, Ivan; Kalvoda, Jaroslav; and Frostl, Wolfgang, 4,614,614, Cl. 540-359.000.

Kaminetzky, Dov A., to General Instrument Corporation. RF receiver utilizing a multiple echo delay line. 4,614,946, Cl. 343-18.00E.

Kamitz, Herbert; and Simon, Franz, to Josef Feller Gesellschaft m.b.H. Apparatus for screening appliances from high frequency interference. 4,614,924, Cl. 333-167.00.

Kamo, Yuichi: *See*—
Mikami, Nobuo; Kamo, Yuichi; and Kojima, Katsuto, 4,614,927, Cl. 335-78.000.

Kamochi, Atsumi: *See*—
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,614,536, Cl. 71-94.000.

Kamui Company, Ltd.: *See*—
Hisao, Shibuya; and Tsunero, Yusa, 4,614,105, Cl. 72-382.000.

Kanada, Kenji: *See*—
Sugiura, Saburo; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,614,159, Cl. 110-261.000.

Kanda, Shoichi: *See*—
Sekimoto, Yukihiko; Yanagida, Makoto; and Kanda, Shoichi, 4,614,601, Cl. 252-8.551.

Kane, Johji, to Matsushita Electric Industrial Co., Ltd. Resonator filters on dielectric substrates. 4,614,925, Cl. 333-174.000.

Kane, Robert P.; Lillie, Edwin D.; and Neidig, John D., to Allied Corporation. Method for placing electrically conductive paths on a substrate. 4,614,837, Cl. 174-68.500.

Kaneko, Teruji; Kawabe, Toshihiko; and Awasaka, Moriyoshi, to Yanmar Diesel Engine Co. Ltd. Outdoor unit of an air conditioner of an engine heat pump type. 4,614,090, Cl. 62-158.000.

Kania, Charles M., to PPG Industries, Inc. Addition interpolymers from isobornyl (meth)acrylate which contain alkoxysilane and/or acyloxysilane groups. 4,614,777, Cl. 526-279.000.

Kanno, Sukeyasu: *See*—
Matsumoto, Muneaki; and Kanno, Sukeyasu, 4,614,932, Cl. 340-52.00B.

Kaplan, Frank: *See*—
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.

Karl Becker GmbH & Co. KG: *See*—
Becker, Reinhard, 4,614,283, Cl. 221-278.000.

Karlsson, Thomas, to Rehband Anatomiska AB. Hinge for knee joint bandage. 4,614,181, Cl. 128-80.00C.

Karpati, Egon: *See*—
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.

Karstens, Werner: *See*—
Huhn, Helmut; and Karstens, Werner, 4,614,780, Cl. 525-329.100.

Karwowski, Jan, to Nabisco Brands, Inc. Process of preparing instant, flaked, wheat farina. 4,614,664, Cl. 426-621.000.

Kasai, Shozo: *See*—
Nishizawa, Hiroshi; Kasai, Shozo; Okada, Yasunori; Osada, Yuichi; and Mukoyama, Yoshiyuki, 4,614,782, Cl. 525-424.000.

Kasai, Shunichi: *See*—
Okubo, Toshikazu; Mori, Yasuo; and Kasai, Shunichi, 4,614,568, Cl. 204-29.000.

Kase, Toshio: *See*—
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Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Baby carriage grip rod locking mechanism. 4,614,454, Cl. 403-62.000.

Kasuga Denki Co., Ltd.: *See*—
Kakinaka, Shoichiro, 4,614,311, Cl. 242-47.010.

Katano, Kazuyuki: *See*—
Hata, Yoshitada; Katano, Kazuyuki; and Homma, Isao, 4,614,002, Cl. 15-53.00A.

Katayama, Shigeru; Nakano, Takayuki; and Takeda, Nobuyuki, to Mitsui Petrochemical Industries, Ltd. Polyglycidyl ethers of polynuclear polyhydric phenols. 4,614,826, Cl. 549-559.000.

Katerberg, James A.; Craig, Evan L.; and Huliba, David A., to Eastman Kodak Company. Ink circulation system for continuous ink jet printing apparatus. 4,614,948, Cl. 346-75.000.

Kativois, Michel, to Societe Kativois. Process and device for the anticipatory self-adapting regulation of a procedure. 4,614,860, Cl. 219-492.000.

Kato, Tadayoshi: *See*—
Kezuka, Seiju; Yoshimura, Tsuneo; Kato, Tadayoshi; and Iida, Moriya, 4,614,632, Cl. 264-280.000.

Kato, Yoshito; Sunahara, Shuichi; and Kurebayashi, Susumu, to Toyota Jidosha Kabushiki Kaisha. Automatic painting system. 4,614,164, Cl. 118-323.000.

Katoh, Kazunobu: *See*—
Hayashi, Hiroshi; Katoh, Kazunobu; and Yoshida, Takashi, 4,614,681, Cl. 428-201.000.

Katoh, Tadayoshi: *See*—
Yamashita, Atsushi; Katoh, Tadayoshi; and Kurihara, Hiroshi, 4,614,933, Cl. 340-347.0DD.

Katsura, Koyo: *See*—
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Kauth, Hermann: *See*—
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Kawabata, Takashi: *See*—
Ishizaki, Akira; Kawabata, Takashi; and Matsumura, Susumu, 4,614,418, Cl. 354-407.000.

Kawabe, Seikichi, to Shibuya Kogyo Co., Ltd. Apparatus for transversely sealing packages. 4,614,078, Cl. 53-551.000.

Kawabe, Toshihiko: *See*—
Kaneko, Teruji; Kawabe, Toshihiko; and Awasaka, Moriyoshi, 4,614,090, Cl. 62-158.000.

Kawada, Shigeki; and Fujioka, Yoshiki, to Fanuc Ltd. Mechanism and method for automatically changing tools. 4,614,020, Cl. 29-568.000.
Kawahara, Atsushi; Ota, Tadashi; Kuroiwa, Toshihisa; Isogai, Masaki; Takatsu, Norihiko; and Kawamura, Koichiro, to Nippon Kogaku K.K. Still picture signal conversion apparatus capable of trimming operation. 4,614,977, Cl. 358-260.000.
Kawai, Michio: *See*—
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Kawakami, Yoshinobu: *See*—
Miyakawa, Nobuhiro; Yano, Koji; Yamamoto, Kazuo; Higashiguchi, Teruaki; and Kawakami, Yoshinobu, 4,614,698, Cl. 430-106.600.
Kawamata, Masanobu; Ushimaru, Koichi; and Yamane, Shuji, to Nippon Shinyaku Co., Ltd. Liposome and method of manufacture therefor. 4,614,796, Cl. 536-5.000.
Kawamura, Koichiro: *See*—
Kawahara, Atsushi; Ota, Tadashi; Kuroiwa, Toshihisa; Isogai, Masaki; Takatsu, Norihiko; and Kawamura, Koichiro, 4,614,977, Cl. 358-260.000.
Kawamura, Yoshio: *See*—
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Kawanishi, Toshiyuki: *See*—
Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, 4,614,682, Cl. 428-213.000.
Kawano, Mitsumo, to Kabushiki Kaisha Toshiba. Balanced modulator circuit. 4,614,911, Cl. 329-101.000.
Kawashima Packaging Machinery Ltd.: *See*—
Ida, Keizo; and Goto, Akihiko, 4,614,079, Cl. 53-563.000.
Kazimir, Palac, to Zenith Electronics Corporation. Tension mask mounting structure. 4,614,892, Cl. 313-402.000.
Keane Monroe Corporation: *See*—
Sorber, Robert, 4,614,057, Cl. 49-29.000.
Keaton, Robert E., to Garrett Corporation, The. Method of assembling a horizontal shell mold casting system and the resulting system. 4,614,217, Cl. 164-137.000.
Keeffe, William M.: *See*—
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Keene, John F.; Kuller, Bengt L.; and Kemmeter, Robert G., to Enkel Corporation. Apparatus for continuously supplying a web of sheet material. 4,614,313, Cl. 242-58.600.
Keener, Ivian G.; Newlove, John C.; Portnoy, Robert C.; Fehler, Daniel F.; and Pober, Kenneth W., to Exxon Chemical Patents Inc. Use of mono and polyalkylene glycol ethers as agents for the release of differentially stuck drill pipe. 4,614,235, Cl. 166-301.000.
Keinert, Joachim: *See*—
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Kemmeter, Robert G.: *See*—
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Kennecott Corporation: *See*—
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Kennedy Company: *See*—
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Kent, Bryan P.: *See*—
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Kerivan, Leo, to Precision Handling Devices Inc. Drive mechanism especially for web feed tractors. 4,614,508, Cl. 474-153.000.
Kermer, Wolf-Dieter: *See*—
Epple, Gerhard; Krallmann, Reinhold; Kermer, Wolf-Dieter; and Weber, Hans, 4,614,804, Cl. 548-160.000.
Kernforschungszentrum Karlsruhe G.m.b.H.: *See*—
Reimann, Jorg, 4,614,527, Cl. 55-170.000.
Kersten, Gerard M.; and Ferrante, Ronald A., to United States of America, Navy. Spherical section optical mount. 4,614,403, Cl. 350-252.000.
Kesten, Arthur S., to United Technologies Corporation. Catalytic metal hydride space heater. 4,614,176, Cl. 126-110.00R.
Kezuka, Seiju; Yoshimura, Tsuneo; Kato, Tadayoshi; and Iida, Moriya, to Nippon Petrochemicals Company, Limited. Method and apparatus for continuously forming embossed sheets. 4,614,632, Cl. 264-280.000.
Khan, M. Asif; Schulze, Richard G.; and Skogman, Richard A., to Honeywell Inc. Tunable cut-off UV detector based on the aluminum gallium nitride material system. 4,614,961, Cl. 357-30.000.
Kiczek, Edward F.; Beckner, Mervyn J.; and Trimon, Emiliano, to Exxon Research and Engineering Co. Method and apparatus for atomizing fuel. 4,614,490, Cl. 431-4.000.
Kihara, Kazuaki; and Kuroda, Makoto, to Takeda Chemical Industries, Ltd. Method of producing 1,2,3-trithiane compounds. 4,614,821, Cl. 544-145.000.
Kihara, Toshimasa: *See*—
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Killion, William D. Interface between video cassette player and television receiver. 4,615,044, Cl. 381-109.000.
Kim, Dal W.; Kim, Kyung H.; and Kim, Seon H., to Gold Star Company, Ltd. Refrigerator with a closeable refrigerating compartment. 4,614,092, Cl. 62-408.000.
Kim, Ki W., to Youngnam Textile Co., Ltd. Method for manufacturing a cotton yarn. 4,614,081, Cl. 57-12.000.
Kim, Kyung H.: *See*—
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Kim, Seon H.: *See*—
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Kimura, Kenji: *See*—
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Kimura, Takayoshi; and Tsuyuguchi, Seiichi, to Sumitomo Metal Mining Company Limited. Method of operating a copper converter. 4,614,542, Cl. 75-76.000.
King, Frank E.; Estebanez, Joseph; and Lang, Reginald W. Break-away coupling for hoselines. 4,614,201, Cl. 137-68.100.
King, James T.; and Beatty, Charles W., Jr., to Audiometrics, Inc. Audiologic testing method and apparatus with compensating means for soundwave attenuation through a transmitting medium. 4,615,007, Cl. 364-415.000.
King, L. Tony, to Komax Systems, Inc. Stacked motionless mixer. 4,614,440, Cl. 366-336.000.
Kinsolving, Clyde R.: *See*—
Georgiev, Vassil S.; Mack, Robert A.; and Kinsolving, Clyde R., 4,614,810, Cl. 549-479.000.
Kirkemo, Curtis L.; and Shipchandler, Mohammed T., to Abbott Laboratories. Aminomethylfluorescein derivatives. 4,614,823, Cl. 544-300.000.
Kirlin, John J.: *See*—
Hawkins, Hugh M., 4,614,251, Cl. 182-63.000.
Kitatani, Katsugi; Murata, Masataka; Yokoya, Hiroaki; and Suzuki, Nobuo, to Fuji Photo Film Co., Ltd. Liquid developers for electrostatic images. 4,614,699, Cl. 430-115.000.
Kitazawa, Yoichi: *See*—
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KitchenAid, Inc.: *See*—
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Klahr, Erhard: *See*—
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Klauke, Erich: *See*—
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Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,614,532, Cl. 71-92.000.
Klein, Hans-Hermann: *See*—
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Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Gaffal, Karl, 4,614,482, Cl. 417-367.000.
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Klink, Rainer; and German, Johann, to Deutsche Automobilgesellschaft, mbH. Centrifugal clutch. 4,614,260, Cl. 192-105.0CE.
Knable, Joseph J.: *See*—
Lundin, Donald G.; and Knable, Joseph J., 4,614,359, Cl. 280-699.000.
Knesewitsch, Jakob; and Pointner, Manfred, to Siemens Aktiengesellschaft. Apparatus for a redundant power supply. 4,614,877, Cl. 307-64.000.
Knoch, Heinrich; Schwetz, Karl A.; Lipp, Alfred; and Bechler, Eckhart, to Wacker-Chemie GmbH. Polycrystalline sintered compacts based on europium hexaboride and process for their manufacture. 4,614,724, Cl. 501-87.000.
Kobayashi, Akira: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Ohara, Minoru; Kobayashi, Akira; and Akatsu, Tsuneo, 4,614,733, Cl. 514-54.000.
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Kobayashi, Kuninori: *See*—
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Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, to Hitachi, Ltd. Digital-to-analog converter device for processing PCM signals of different sampling frequencies. 4,614,934, Cl. 40-347.0DA.
Kobayashi, Shozaburo, to Kabushiki Kaisha Kokusai Technicals. Method of mixing fuel oils. 4,614,438, Cl. 366-132.000.
Kobe, Michael, to Plastifol-Manfred Rothe KG. Method and apparatus for making a surface-lined article. 4,614,558, Cl. 156-163.000.
Koch, Andrew B., to Energy Modifications Enterprises, Inc. Exhaust powered drive shaft torque enhancer. 4,614,086, Cl. 60-624.000.
Koch, Richard L. Fifth-wheel assembly. 4,614,355, Cl. 280-438.00R.
Kochli, Walter, to Prenco AG. Soldering iron and soldering apparatus. 4,614,295, Cl. 228-53.000.

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Koizumi, Mitsuyoshi; Oshima, Yoshimasa; Akiyama, Nobuyuki; and Yachi, Toshiaki, to Hitachi, Ltd.; and Hitachi Electronics Engineering Co., Ltd. Automatic contaminants detection apparatus. 4,614,427, Cl. 356-237.000.
Kojima, Katsuto: *See*—
Mikami, Nobuo; Kamo, Yuichi; and Kojima, Katsuto, 4,614,927, Cl. 335-78.000.
Kojima, Kazuhiro: *See*—
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Kolenik, Steve A.: *See*—
Imran, Mir; Bach, Stanley M., Jr.; and Kolenik, Steve A., 4,614,192, Cl. 128-419.00D.
Komamura Photographic Co., Ltd.: *See*—
Tomidokoro, Kanji, 4,614,414, Cl. 354-284.000.
Komax Systems, Inc.: *See*—
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Komeyama, Yoshihiro, to Hitachi, Ltd. Alignment apparatus with optical length-varying optical system. 4,614,431, Cl. 356-401.000.
Komura, Masahiko, to Rinnai Corporation. Operation control apparatus in a combustion device. 4,614,993, Cl. 361-257.000.
Konai, Yutaka; Hayashi, Shoichiro; Kubota, Yoshikazu; and Kodama, Kouichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing i-brassicasterol. 4,614,620, Cl. 260-397.250.
Konishi, Satoshi, to Kabushiki Kaisha Ishida Koki Seisakusho. Separating chute system. 4,614,262, Cl. 193-23.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Sasaki, Masao; and Onodera, Kaoru, 4,614,709, Cl. 430-546.000.
Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,614,710, Cl. 430-549.000.
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Koponen, Martti; Pullinen, Martti; Koski, Erkki; and Koskimies, Jouni, to Valmet Oy. Web-forming section in a paper machine. 4,614,566, Cl. 162-301.000.
Koppenberg, Bruce G. Modular columbarium structure. 4,614,066, Cl. 52-134.000.
Korfgen, Harald; Geipel, Werner; and Heimann, Bruno, to Friedrich Grohe Armaturenfabrik GmbH & Co. Water-dispensing cleaning brush with deflecting means. 4,614,449, Cl. 401-287.000.
Korosi, Jeno: *See*—
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Koskinen, Leslie M., to Northern Telecom Limited. Adaptively tuned clock recovery circuit. 4,615,041, Cl. 375-114.000.
Kosowsky, David I.: *See*—
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Kosugi, Kimihiro: *See*—
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Kotera, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Method of and apparatus for controlling load distribution for a continuous rolling mill. 4,614,098, Cl. 72-8.000.
Kozakiewicz, Joseph J., to American Cyanamid Company. Homogeneous molecular composites, process for their production and articles made therefrom. 4,614,784, Cl. 527-313.000.
Kraatz, Gary W.; Chavdarian, Charles G.; and Heusinkveld, Valerie F., to Stauffer Chemical Co. Trichloromethylphosphonodithioates. 4,614,828, Cl. 558-203.000.
Kraft, Inc.: *See*—
White, Donnie R.; Hobgood, David F.; Swim, Larry E.; and Staley, Leo D., 4,614,661, Cl. 426-511.000.
Krakower, Sam: *See*—
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Krall, Thomas J., to Owens-Illinois, Inc. Article trimming apparatus. 4,614,018, Cl. 29-33.00J.
Krallmann, Reinhold: *See*—
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Kraus, Menahem A., to Monsanto Company. Water-free hydrocarbon separation membrane and process. 4,614,524, Cl. 55-16.000.
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Kreuter, Peter: *See*—
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Kruschwitz, Werner, to Draftex Industries, Limited. Assembled trimming and sealing strip. 4,614,347, Cl. 277-184.000.
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Kubo, Takashi, to Fuji Photo Film Co., Ltd. Process for producing multilayer conductor structure. 4,614,563, Cl. 156-643.000.
Kubo, Yoichiro: *See*—
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Kubota, Harunori: *See*—
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Kubota, Yuichi: *See*—
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Kuch, Heinz; and Kruse, Hansjorg, to Hoechst Aktiengesellschaft. Oxindole derivatives, pharmaceutical compositions and use. 4,614,739, Cl. 514-212.000.
Kuhl, Wilfried; and Gemmel, Edwin, to Siemens Aktiengesellschaft. Vacuum switch for the low-voltage range, especially a low-voltage contactor. 4,614,850, Cl. 200-144.00B.
Kuhle, Engelbert: *See*—
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Kuhnel, Werner; and Spielau, Paul, to Dynamit Nobel AG. Light-resistant and weather-proof polyolefin foams. 4,614,753, Cl. 521-85.000.
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Kullman, Uri; and Jordan, William H., to Kennedy Company. Servo power amplifier having load equalization. 4,614,901, Cl. 318-99.000.
Kumagai, Yutaka, to OKI Electric Industry Co. Ltd. Semiconductor memory device with self correction circuit. 4,615,030, Cl. 371-71.000.
Kumbatovic, Robert A., to RCA Corporation. Switching circuit. 4,614,897, Cl. 315-224.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Hybrid cell line for producing monoclonal antibody to a human T cell antigen, antibody, and methods. 4,614,720, Cl. 435-240.000.
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Macksoud, Albert A. Safety device for rocking arm saw. 4,614,140, Cl. 83-397.000.
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Mannesmann AG: *See*—
Ambrosi, Luciano; von Ploetz, Klaus; Zangs, Ludger; and Nordmeyer, Friedrich, 4,615,036, Cl. 373-93.000.
Lenk, Rainer, 4,614,228, Cl. 165-89.000.

Manoly, Arthur E.: *See*—
Reed, Elmer E.; and Manoly, Arthur E., 4,614,926, Cl. 333-244.000.

Manthis, Danny O., to Teledyne Industries, Inc. Electrolyte battery anti-splash system. 4,614,694, Cl. 429-84.000.

Marans, Nelson S.; and Pulford, Stephen M., to W. R. Grace & Co. Water soluble linear polyethyleneimine derivative from water-insoluble polyethyleneimine, polyvinyl alcohol and aldehyde. 4,614,762, Cl. 525-61.000.

Marathon Oil Company: *See*—
Schroeder, Donald E., Jr.; Plummer, Mark A.; and Zimmerman, Carle C., Jr., 4,614,623, Cl. 260-505.00R.

Marchetti, Stephen: *See*—
Rattman, William J.; Marchetti, Stephen; and Galvin, Aaron A., 4,614,968, Cl. 358-93.000.

Marconi Company Limited, The: *See*—
Baxter, Ivor R.; and Hair, Thomas, 4,614,426, Cl. 356-1.000.

Marcotte, Pierre: *See*—
Arsenesult, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., 4,614,499, Cl. 434-262.000.

Mariano, Armando: *See*—
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Maringer, Robert E., to Battelle Development Corporation. Method of and apparatus for casting metal strip employing free gap melt drag. 4,614,222, Cl. 164-463.000.

Marlin, Lawrence: *See*—
Rosen, Meyer R.; and Marlin, Lawrence, 4,614,539, Cl. 75-3.000.

Marnette, Werner: *See*—
Berndt, Gerhard; and Marnette, Werner, 4,614,541, Cl. 75-74.000.

Martin, William J., to Whirlpool Corporation. Pile height setting display for vacuum cleaner. 4,614,003, Cl. 15-339.000.

Martinez, Manuel: *See*—
Gemra, Richard J.; and Martinez, Manuel, 4,614,399, Cl. 339-205.000.

Maru, Hideki: *See*—
Morita, Isamu; Nozawa, Yasuji; and Maru, Hideki, 4,614,255, Cl. 188-315.000.

Maruyama, Kazuhiro: *See*—
Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, 4,614,230, Cl. 165-151.000.

Marvin, David J.; and Darges, Walter F., to Boeing Company, The. Stowable sliding filter. 4,614,316, Cl. 244-1.00R.

Masaki, Ryoichi: *See*—
Fukuda, Hiroaki; Sumiyoshi, Kenji; Masaki, Ryoichi; and Tani, Zempei, 4,614,874, Cl. 250-560.000.

Massachusetts Institute of Technology: *See*—
Hsu, Michael S.; and Wilson, Charles F., 4,614,628, Cl. 264-61.000.

Masse, James H.; and Masse, Patrick J. Powered wheel chair. 4,614,246, Cl. 180-6.500.

Masse, Patrick J.: *See*—
Masse, James H.; and Masse, Patrick J., 4,614,246, Cl. 180-6.500.

Masuda, Hitoshi; Takada, Koichi; and Nakata, Yoshiro, to Director-General of Agency of Industrial Science & Technology; and Sanyo Kasei Kogyo Kabushiki Kaisha. Semipermeable polymeric film membrane. 4,614,586, Cl. 210-500.280.

Masuda, Senichi. Method for producing an ozone gas and apparatus for producing the same. 4,614,573, Cl. 204-176.000.

Masuda, Takeshi: *See*—
Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, 4,614,774, Cl. 525-504.000.

Masumoto, Tsuyoshi; Hamashima, Tatsuo; and Hagiwara, Michiaki, to Unitika Ltd.; and Masumoto, Tsuyoshi. Method of manufacturing thin metal wire. 4,614,221, Cl. 164-462.000.

Masuyama, Kenichi: *See*—
Ryoke, Katsumi; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,614,685, Cl. 428-323.000.

Matas, Ricardo D.; Codina Puigmarti, Jose M.; Repolles, Jose M.; and Sera, Jorge S., to Lacer, S.A. 2-halo-pyridines. 4,614,833, Cl. 546-314.000.

Mathew, Chempolil T.; and Ulmer, Harry E., to Allied Corporation. Process for the preparation of N-hydroxy organo imidate compounds. 4,614,813, Cl. 558-7.000.

Mathews, Robert J.: *See*—
Clupper, Charles B.; and Mathews, Robert J., 4,614,970, Cl. 358-120.000.

Mathison, Allen D.; and Nelson, Dale K., to Cherne Industries, Inc. Expansible pneumatic plug device. 4,614,206, Cl. 138-93.000.

Matsubara, Isamu, to Yoshida Kogyo K. K. Assembly of prefabricated panel units having lapping watertight seals. 4,614,067, Cl. 52-235.000.

Matsuda, Ikuo: *See*—
Okimoto, Haruo; and Matsuda, Ikuo, 4,614,173, Cl. 123-216.000.

Matsui, Koji: *See*—
Nagano, Ryuzo; Arai, Shinobu; and Matsui, Koji, 4,614,043, Cl. 33-529.000.

Matsukawa, Hiroharu: *See*—
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Matsumoto, Katsutake; and Yachida, Yoichi, to Nippon Seiki Co., Ltd. Measuring device. 4,614,114, Cl. 73-313.000.

Matsumoto, Muneaki; and Kanno, Sukeyasu, to Nippon Soken, Inc. Alarm system for the unexpected release of a brake in a vehicle. 4,614,932, Cl. 340-52.00B.

Matsumoto, Sunao: *See*—
Onodera, Toshihiro; Tanaka, Shigeru; and Matsumoto, Sunao, 4,614,999, Cl. 363-28.000.

Matsumoto, Toshiaki: *See*—
Hata, Yoshiaki; Matsumoto, Toshiaki; Tominaga, Shinji; Yamamoto, Koji; Yamashita, Maki; and Tanaka, Yoshihiro, 4,614,417, Cl. 354-403.000.

Matsumura, Susumu: *See*—
Ishizaki, Akira; Kawabata, Takashi; and Matsumura, Susumu, 4,614,418, Cl. 354-407.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kane, Johji, 4,614,925, Cl. 333-174.000.
Maney, George A.; and Rzeszewski, Theodore S., 4,614,971, Cl. 358-147.000.

Matsushita Electric Works, Ltd.: *See*—
Haraguchi, Hideaki, 4,614,036, Cl. 30-200.000.

Matsushita, Kenyo; and Ishida, Hiroshi, to Nippon Light Metal Company Limited. Electromagnetic induction heating cooking utensil. 4,614,852, Cl. 219-10.49R.

Matsushita, Yoh: *See*—
Hakkaku, Kunio; Matsushita, Yoh; Tokumasu, Takahiko; and Yamamoto, Toshio, 4,614,949, Cl. 346-76.0PH.

Matsuzawa, Toshiharu; Iwayanagi, Takao; Douta, Kikuo; Yanazawa, Hiroshi; Kohashi, Takahiro; and Nonogaki, Saburo, to Hitachi, Ltd. Method of forming a microscopic pattern with far UV pattern exposure, alkaline solution development, and dry etching. 4,614,706, Cl. 430-313.000.

Mattel, Inc.: *See*—
Yamasaki, Toshio, 4,614,504, Cl. 446-356.000.

Mattes, Bernhard; Mausner, Eberhard; and Suchowerskyj, Wadym, to Robert Bosch GmbH. Vehicle passenger restraint system. 4,614,876, Cl. 307-10.0SB.

Maurer, Francis E. Measuring and instructional ruler device. 4,614,042, Cl. 33-494.000.

Maurice, Paul E. Poultry brooder. 4,614,166, Cl. 119-32.000.

Mauritz, Bernd, to Hilti Aktiengesellschaft. Expansion anchor. 4,614,471, Cl. 411-21.000.

Mausner, Eberhard: *See*—
Mattes, Bernhard; Mausner, Eberhard; and Suchowerskyj, Wadym, 4,614,876, Cl. 307-10.0SB.

Mavica, Kenneth M.: *See*—
Gorman, William G.; Popp, Karl F.; and Mavica, Kenneth M., 4,614,649, Cl. 424-54.000.

Maxham, Kenneth Y., to Rockwell International Corporation. Series circuit regulating apparatus. 4,614,906, Cl. 323-267.000.

May, John W.: *See—*
Parker, Wayne C.; and May, John W., 4,614,882, Cl. 307-443.000.
Mayer, Edward F., to Forems, Inc. Storage assembly for trailer hitch torsion bars. 4,614,353, Cl. 280-406.00A.
Mayer, Nathan, to Pacon Manufacturing Corp. Patient undersheet for preventing bed sores. 4,614,000, Cl. 5-484.000.
Mazda Motor Corporation: *See—*
Okimoto, Haruo; and Matsuda, Ikuo, 4,614,173, Cl. 123-216.000.
Tanigawa, Yoshitaka; and Okino, Yoshinori, 4,614,174, Cl. 123-478.000.
Mazzocchi, Romano: *See—*
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McCaully, Ronald J.: *See—*
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McCracken, Robert W.; and Baesler, Linda A., to Johnson & Johnson Products, Inc. Adhesive film dressing. 4,614,183, Cl. 128-132.00R.
McDonald, John F.: *See—*
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.
McElwee, Terry D.: *See—*
Carpenter, Charles L.; Carter, Jerry L.; and McElwee, Terry D., 4,614,836, Cl. 174-51.000.
McGee, Terrill A. Vehicle actuated, roadway electrical generator. 4,614,875, Cl. 290-1.00R.
McHenry, Ronald G.: *See—*
Crivaro, Roger P.; McHenry, Ronald G.; and McHenry, Ronald M., 4,614,063, Cl. 51-174.000.
McHenry, Ronald M.: *See—*
Crivaro, Roger P.; McHenry, Ronald G.; and McHenry, Ronald M., 4,614,063, Cl. 51-174.000.
McIntire, William R., to Dowell Schlumberger Incorporated. Machine for mixing solid particles with a fluid composition. 4,614,435, Cl. 366-40.000.
McKee, William R.: *See—*
Carson, Kent R.; Luttmer, Joseph D.; Williams, Charles E.; McKee, William R.; Tso, Stephen T.; and Johnson, Elwin L., 4,614,835, Cl. 136-250.000.
McLain, Philip A.: *See—*
LaValle, Dean R.; and McLain, Philip A., 4,614,274, Cl. 212-160.000.
Mehra, Ravinder C.; Relyea, Robert G.; and Baird, Peter K., to Sybron Corporation. Frangible bonded disposable filtration unit with recoverable filter. 4,614,585, Cl. 210-433.200.
Melby, Phillip J. Snow plow apparatus with hinged side blade. 4,614,048, Cl. 37-280.000.
Meldgaard, Poul O.: *See—*
Valbjorn, Knud V.; and Meldgaard, Poul O., 4,614,327, Cl. 251-129.160.
Mello Ribeiro Pinto, Luis A. C., to Santal Equipamentos S.A. Comercio E Industria. Mechanical sugar cane grab loader. 4,614,476, Cl. 414-729.000.
MEM Muszaki Intezet: *See—*
Fekete, Andras; Seres, Laszlo ; Foldesi, Istvan; and Rusz, Vazul, 4,614,305, Cl. 241-36.000.
Menard, Milton. Mechanically actuated downhole locking sub. 4,614,233, Cl. 166-206.000.
Mendenhall, George A.; and Carter, Scott K. Food product centering and aligning tube. 4,614,141, Cl. 83-402.000.
Mennicken, Gerhard: *See—*
Richter, Roland; Muller, Hanns P.; Kubitza, Werner; Engbert, Theodor; and Mennicken, Gerhard, 4,614,785, Cl. 528-45.000.
Merck & Co., Inc.: *See—*
Hughes, Joseph V.; Scolnick, Edward M.; and Tomassini, Joanne E., 4,614,793, Cl. 530-350.000.
Meredith, Paul F.: *See—*
Googin, John M.; Napier, John M.; Makarewicz, Mark A.; and Meredith, Paul F., 4,614,592, Cl. 210-679.000.
Merten, Helmut L.: *See—*
Maender, Otto W.; and Merten, Helmut L., 4,614,817, Cl. 564-406.000.
Merten, Josef: *See—*
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.
Mery, Jean C.; Thioux, Alain; and Meynier, Guy, to Societe Anonyme D.B.A. Braking system incorporating at least one sliding brake disc. 4,614,254, Cl. 188-71.500.
Meseltron, S.A: *See—*
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Meszaros, Jozsef: *See—*
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Meszaros nee Brill, Judit: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Sobotta, Reinhard; and Isermann, Heinrich, 4,614,422, Cl. 355-29.000.
Mettler, Franz, to Staeubli Ltd. Dobby. 4,614,211, Cl. 139-76.000.
Metzeler Kautschuk GmbH: *See—*
Brocke, Rolf, 4,614,061, Cl. 49-440.000.
Meyer, Ronald A.: *See—*
Guercio, James; Meyer, Ronald A.; and Sakamoto, Shiro, 4,614,846, Cl. 200-5.00E.
Meyer, Vincent D.; and Keeffe, William M., to GTE Products Corporation. High intensity discharge lamp alkali metal loss reduction means. 4,614,890, Cl. 313-25.000.
Meynier, Guy: *See—*
Mery, Jean C.; Thioux, Alain; and Meynier, Guy, 4,614,254, Cl. 188-71.500.
Miccoli, Giuseppe: *See—*
Roveda, Riccardo; Di Gregorio, Carlo; De Gasperis, Paolo; and Miccoli, Giuseppe, 4,614,923, Cl. 333-147.000.
Michisnita, Teruo: *See—*
Taniguchi, Yasuyuki; Yoshida, Kotaro; Takeshi, Yasuhira; Michishita, Teruo; Kawai, Michio; and Kawakami, Makoto, 4,614,461, Cl. 405-211.000.
Midorikawa, Yuichiro: *See—*
Kusakabe, Hitoshi; Yamauchi, Hiroshi; and Midorikawa, Yuichiro, 4,614,714, Cl. 435-25.000.
Mikami, Kazuo; Satoh, Fumihiko; and Shimura, Mikihiko, to Omron Tateisi Electronics Co. Light emitting and receiving device. 4,614,958, Cl. 357-19.000.
Mikami, Nobuo; Kamo, Yuichi; and Kojima, Katsuto, to NEC Corporation. Polarized electromagnetic relay. 4,614,927, Cl. 335-78.000.
Mildenberger, Hilmar: *See—*
Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, 4,614,535, Cl. 71-92.000.
Miles, Gilbert, to Leeds, Walter. Co-dispenser. 4,614,284, Cl. 222-331.000.
Milfarm Manufacturing Corporation: *See—*
Miller, Maurice E., 4,614,240, Cl. 172-799.500.
Milikovsky, Roman: *See—*
Josephs, Mark A.; Milikovsky, Roman; Penird, Carl W.; and Rehkopf, Charles H., 4,614,896, Cl. 313-481.000.
Miller, David D., to Garrett Corporation, The. Flotation platform. 4,614,500, Cl. 441-40.000.
Miller, Ellsworth S., to Lectron Products, Inc. Electrical pressure switch. 4,614,849, Cl. 200-81.00R.
Miller, Larry D.; and Drabik, Thomas D., to General Motors Corporation. Sun visor stowed on pillar. 4,614,375, Cl. 296-97.00G.
Miller, Maurice E., to Milfarm Manufacturing Corporation. Multi-blade soil handling apparatus. 4,614,240, Cl. 172-799.500.
Mills, Roy. Apparatus for aligning hitches of towing and towed vehicles. 4,614,356, Cl. 280-477.000.
Minagawa, Isao; and Minagawa, Toshio. Driller for use in rice field. 4,614,239, Cl. 172-21.000.
Minagawa, Toshio: *See—*
Minagawa, Isao; and Minagawa, Toshio, 4,614,239, Cl. 172-21.000.
Minami, Syuji: *See—*
Kajiura, Hirokazu; Oda, Hidekuni; and Minami, Syuji, 4,614,778, Cl. 526-281.000.
Minemura, Tetsuro: *See—*
Kajiyama, Hiroshi; Minemura, Tetsuro; Ando, Hisashi; and Konno, Kiyoshi, 4,614,692, Cl. 429-44.000.
Mineral Deposits Limited: *See—*
Giffard, Philip J., 4,614,580, Cl. 209-459.000.
Minigrip, Inc.: *See—*
Siegel, Karl-Heinz, 4,615,045, Cl. 383-5.000.
Minnesota Mining and Manufacturing Company: *See—*
Larson, James M.; and Noreen, Allen F., 4,614,667, Cl. 427-54.100.
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Minolta Camera Kabushiki Kaisha: *See—*
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Oka, Tateki; and Uchimoto, Yoshihiro, 4,614,697, Cl. 430-103.000.
Mir, Jose M.; and Agostinelli, John A., to Eastman Kodak Company. Electrooptic device for scanning and information modulating a plurality of light beams. 4,614,408, Cl. 350-388.000.
Mirowski, Mieczyslaw: *See—*
Imran, Mir; Bach, Stanley M., Jr.; and Kolenik, Steve A., 4,614,192, Cl. 128-419.00D.
Mistyurik, John D., to Monarch Marking Systems, Inc. Hand-held labeler. 4,614,561, Cl. 156-384.000.
Mita Industrial Co., Ltd.: *See—*
Miyakawa, Nobuhiro; Yano, Koji; Yamamoto, Kazuo; Higashiguchi, Teruaki; and Kawakami, Yoshinobu, 4,614,698, Cl. 430-106.600.
Mitel Corporation: *See—*
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Mitsubishi Chemical Industries Limited: *See—*
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, 4,614,521, Cl. 8-471.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Asayama, Yoshiaki, 4,614,175, Cl. 123-571.000.
Ikegami, Takashi; and Mori, Masakazu, 4,614,889, Cl. 310-263.000.
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Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, 4,614,230, Cl. 165-151.000.
Sasao, Isao, 4,614,931, Cl. 340-19.00R.
Taniguti, Ryousuke, 4,614,117, Cl. 73-659.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Sugio, Akitoshi; Okabe, Masao; and Amagai, Akikazu, 4,614,773, Cl. 525-391.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Sakaguchi, Katsuyoshi; and Koga, Yukihiro, 4,614,485, Cl. 425-38.000.
Yoneda, Kenichi; Miyake, Masato; Muramatsu, Kenzo; and Tatani, Atsushi, 4,614,645, Cl. 423-240.000.

Mitsubishi Paper Mills, Ltd.: *See*—
Miyauchi, Masahiro, 4,614,956, Cl. 346-209.000.

Mitsuboshi Belting Ltd.: *See*—
Nishikori, Yoji, 4,614,510, Cl. 474-205.000.

Mitsuharu, Sato; and Torao, Katabira, to Toshiba Kikai Kabushiki Kaisha. Automatic mounting and dismounting apparatus of attachments. 4,614,470, Cl. 409-230.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Katayama, Shigeru; Nakano, Takayuki; and Takeda, Nobuyuki, 4,614,826, Cl. 549-559.000.

Miura, Masakatsu: *See*—
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,614,256, Cl. 192-4.00A.

Miwa, Sinkichi: *See*—
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.

Miyagawa, Takuya: *See*—
Teshima, Kiyomi; Kajitani, Yukimasa; Takeya, Kazuo; and Miyagawa, Takuya, 4,614,083, Cl. 60-39.530.

Miyakawa, Nobuhiro; Yano, Koji; Yamamoto, Kazuo; Higashiguchi, Teruaki; and Kawakami, Yoshinobu, to Mita Industrial Co., Ltd. Two-component electrophotographic developer with magnetic carrier. 4,614,698, Cl. 430-106.600.

Miyake, Masato: *See*—
Yoneda, Kenichi; Miyake, Masato; Muramatsu, Kenzo; and Tatani, Atsushi, 4,614,645, Cl. 423-240.000.

Miyasaka, Eiji: *See*—
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Miyata, Hiroshi: *See*—
Hoshino, Shigeru; and Miyata, Hiroshi, 4,614,869, Cl. 250-231.0SE.

Miyauchi, Masahiro, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording sheet. 4,614,956, Cl. 346-209.000.

Miyazaki, Noriyuki: *See*—
Ito, Tukasa; and Miyazaki, Noriyuki, 4,614,696, Cl. 429-222.000.

Mizui, Takashi: *See*—
Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, 4,614,774, Cl. 525-504.000.

Mizuno, Fumio: *See*—
Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, 4,614,725, Cl. 501-136.000.

Mizuno, Yutaka: *See*—
Takano, Akira; Mizuno, Yutaka; Ishikawa, Hiroyuki; and Honjo, Yoshiaki, 4,614,384, Cl. 312-281.000.

Mobay Chemical Corporation: *See*—
Jackman, Dennis E., 4,614,822, Cl. 544-182.000.

Moberg, Gregory O., to Eastman Kodak Company. FM demodulator with temperature compensation. 4,614,912, Cl. 329-110.000.

Mobil Oil Corporation: *See*—
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,614,578, Cl. 208-120.000.
Colombo, Edward A.; Kwack, Tae H.; and Su, Tien-Kuei, 4,614,764, Cl. 525-72.000.

Mochizuki, Nobuo: *See*—
Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, 4,614,682, Cl. 428-213.000.

Moerner, William E.: *See*—
Huston, Alan L.; and Moerner, William E., 4,614,116, Cl. 73-657.000.

Mohndruck Graphische Betriebe GmbH: *See*—
Kwauka, Gerd-Georg; and Kohn, Ulrich, 4,614,473, Cl. 414-68.000.

Mojoli, Luigi F.; and Olivieri, Angelo F., to Coenco Ltd. High speed data communications system. 4,615,040, Cl. 375-40.000.

Molecular Technology Corporation: *See*—
John, Tom T., 4,614,186, Cl. 128-201.250.

Molex Incorporated: *See*—
Ingwersen, Peter, 4,614,143, Cl. 83-622.000.

Molin, Gerhard D.: *See*—
Appl, Max; Molin, Gerhard D.; Goesele, Wilhelm; Schreiner, Siegfried; and Treiber, Gert, 4,614,647, Cl. 423-515.000.

Molinaro, Bernard J. Visual sound device. 4,614,942, Cl. 340-815.110.

Molins, PLC: *See*—
Hinchcliffe, Dennis; and Labbe, Francis A. M., 4,614,198, Cl. 131-94.000.

Monacelli, Umberto. Reinforced magazine for guiding fasteners. 4,614,291, Cl. 227-120.000.

Monarch Marking Systems, Inc.: *See*—
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Monroe, Raymond J.: *See*—
Hines, John R.; Monroe, Raymond J.; and Ruppel, Danny R., 4,614,444, Cl. 384-138.000.

Monsanto Company: *See*—
Kraus, Menahem A., 4,614,524, Cl. 55-16.000.
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Montecatini Edison S.p.A.: *See*—
Longi, Paolo; Giannini, Umberto; and Mazzocchi, Romano, 4,614,727, Cl. 502-105.000.

Montet, Maurice, to Cibie Projecteurs. Lamp fixing and mounting device. 4,614,997, Cl. 362-382.000.

Moore, Boyd B. Well bore electric pump power cable connector for multiple individual, insulated conductors of a pump power cable. 4,614,392, Cl. 339-94.00R.

Moore, David M.: *See*—
Ream, Ronald L.; Moore, David M.; and Corriveau, Christine L., 4,614,654, Cl. 426-5.000.

Moorhead, Richard W. Musical gift package. 4,614,266, Cl. 206-216.000.

Morbitzer, Leo: *See*—
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.

Mordini, Jacques: *See*—
Cristol, Benoit; and Mordini, Jacques, 4,614,642, Cl. 423-127.000.

Moreau, Michel: *See*—
Pelletier, Jean L.; Moreau, Michel; and Bocquet, Michel, 4,614,115, Cl. 73-599.000.

Moreau, Rene : *See*—
Ernst, Roland; Garnier, Marcel; Giroutru, Michel; and Moreau, Rene , 4,614,225, Cl. 164-504.000.

Mori, Hirofumi; and Hori, Hitoshi, to Sekisui Fine Chemical Co., Ltd. Photocurable diazo or azide composition with acrylic copolymer having hydroxy and amino groups on separate acrylic monomer units. 4,614,701, Cl. 430-175.000.

Mori, Masakazu: *See*—
Ikegami, Takashi; and Mori, Masakazu, 4,614,889, Cl. 310-263.000.

Mori, Yasuo: *See*—
Okubo, Toshikazu; Mori, Yasuo; and Kasai, Shunichi, 4,614,568, Cl. 204-29.000.

Morisawa, Kunio: *See*—
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,614,256, Cl. 192-4.00A.

Morita, Isamu; Nozawa, Yasuji; and Maru, Hideki, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic shock absorber for vehicles. 4,614,255, Cl. 188-315.000.

Morita, Katsuhisa: *See*—
Takiyama, Eiichiro; and Morita, Katsuhisa, 4,614,761, Cl. 525-59.000.

Morris, Howard B: Nut mill. 4,614,033, Cl. 30-120.200.

Morris, Thomas E.: *See*—
Holbrook, Michael T.; and Morris, Thomas E., 4,614,572, Cl. 204-157.950.

Morrison, Richard H., Jr.: *See*—
Zavracky, Paul M.; Senturia, Stephen D.; and Morrison, Richard H., Jr., 4,614,119, Cl. 73-704.000.

Morrison, Roderick G., to Sunburst Energy Systems, Inc. Miniature isotopic soil moisture gage. 4,614,870, Cl. 250-358.100.

Morrow, Duke, to Multi Feed, Inc. Assembling machine with drive mechanism for feed assembly. 4,614,027, Cl. 29-707.000.

Morscheck, Timothy J.: *See*—
Edelen, Stephen A.; and Morscheck, Timothy J., 4,614,126, Cl. 74-333.000.

Moseley, Charles D., Jr.; and Waring, Charles D. Water saving shower head. 4,614,303, Cl. 239-499.000.

Mosher, Philip C.; and Aleem, Mohd A., to Sundstrand Corporation. Improved magnetic rotor. 4,614,888, Cl. 310-261.000.

Motohashi, Minoru: *See*—
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kozo; and Hattori, Sadami, 4,614,880, Cl. 307-200.00A.

Motoi, Etsuo, to Nippon Seiki Co. Ltd. Liquid crystal display device. 4,614,406, Cl. 350-334.000.

Motorola, Inc.: *See*—
Hulseweh, Terry S., 4,614,021, Cl. 29-590.000.
Lauchner, John K.; Christensen, Michael S.; and Alonge, Paul J., 4,614,878, Cl. 307-106.000.
Sood, Lal C.; Golab, James S.; and DeJesus, Armando L., 4,614,883, Cl. 307-449.000.

Motoyoshi, Masatoshi: *See*—
Ishikawa, Nobuo; Takaoka, Akio; Isono, Takashi; Motoyoshi, Masatoshi; and Kojima, Kazuhiro, 4,614,742, Cl. 514-237.000.

Motsch, Roger; and Sechet, Claude, to L'Etat Francais. Teletext receiver. 4,614,972, Cl. 358-147.000.

Mowrer, Gail S.: *See*—
Shelton, Robert N.; and Mowrer, Gail S., 4,614,272, Cl. 211-163.000.

MTU Friedrichshafen GmbH: *See*—
Deutschmann, Herbert, 4,614,150, Cl. 92-221.000.

Mueller Co.: *See*—
Daghe, Joseph L.; and Sands, Robert E., 4,614,113, Cl. 73-201.000.

Mueller, Richard A., to G. D. Searle & Co. Intermediates for 8-chlorodibenz[(b,f)][1,4]oxazepine-10(11H)-carboxylic acid, 2-(sulfinyl- and sulfonyl-containing acyl)hydrazides. 4,614,617, Cl. 540-547.000.

Mueller, Wolfgang: *See*—
Nagare, Arthur T.; Mueller, Wolfgang; Fendya, Thomas J.; and Sestak, Joseph T., 4,614,015, Cl. 29-239.000.

Muir, David E.: *See*—
Fourie, Gideon; and Muir, David E., 4,614,277, Cl. 217-43.00A.
Mukoyama, Yoshiyuki: *See*—
Nishizawa, Hiroshi; Kasai, Shozo; Okada, Yasunori; Osada, Yuichi; and Mukoyama, Yoshiyuki, 4,614,782, Cl. 525-424.000.
Muldery, Hendrikus; van der Struys, Frank V.; and Schubert, Heinz, to Muldery, Henrikus. Apparatus for molding panels, particularly of cementitious material. 4,614,325, Cl. 249-120.000.
Muldery, Henrikus: *See*—
Muldery, Hendrikus; van der Struys, Frank V.; and Schubert, Heinz, 4,614,325, Cl. 249-120.000.
Mulhollan, James S.; and Starr, Lionel. Needle extractor. 4,614,187, Cl. 128-303.00R.
Muller, Hanns P.: *See*—
Richter, Roland; Muller, Hanns P.; Kubitza, Werner; Engbert, Theodor; and Mennicken, Gerhard, 4,614,785, Cl. 528-45.000.
Muller, Karl-Heinz: *See*—
Gerundt, Sebastian; Guse, Rolf; Halterbeck, Walter; Hollenberg, Gunter; Maier, Gerhard; and Muller, Karl-Heinz, 4,614,969, Cl. 358-101.000.
Muller, Manfred: *See*—
Arndt, Peter J.; Wenzel, Franz; Muller, Manfred; and Schlosser, Fritz, 4,614,827, Cl. 556-131.000.
Muller, Walter: *See*—
Neeff, Rutger, deceased; Rolf, Meinhard; and Muller, Walter, 4,614,547, Cl. 106-288.00Q.
Muller, Wolfgang: *See*—
Dreckmann, Karl; and Muller, Wolfgang, 4,614,472, Cl. 414-27.000.
Multi Feed, Inc.: *See*—
Morrow, Duke, 4,614,027, Cl. 29-707.000.
Mummenhoff, Peter: *See*—
Schroer, Wolf-Dieter; Beck, Ulrich; Mummenhoff, Peter; and Baumgen, Heinz, 4,614,546, Cl. 106-213.000.
Mund, Konrad; Luft, Gunter; and Gebhardt, Ulrich, to Siemens Aktiengesellschaft. Apparatus for urea analysis. 4,614,577, Cl. 204-415.000.
Munteanu, Marina A.: *See*—
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,614,299, Cl. 239-6.000.
Murakami, Atsushi, to Sony Corporation. Cassette tape recording and/or reproducing apparatus. 4,614,991, Cl. 360-137.000.
Muramatsu, Ikuei, to Gifu University. Symmetrically-suspended vertical-swing long-period pendulum means. 4,615,022, Cl. 367-179.000.
Muramatsu, Kenzo: *See*—
Yoneda, Kenichi; Miyake, Masato; Muramatsu, Kenzo; and Tatani, Atsushi, 4,614,645, Cl. 423-240.000.
Murata, Masataka: *See*—
Kitatani, Katsugi; Murata, Masataka; Yokoya, Hiroaki; and Suzuki, Nobuo, 4,614,699, Cl. 430-115.000.
Murata, Yukichi: *See*—
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, 4,614,521, Cl. 8-471.000.
Murdock, Keith C.; and Durr, Frederick E., to American Cyanamid Company. 1,4-bis(substituted-amino)-5,8-dihydroxy anthraquinones and leuco bases thereof. 4,614,618, Cl. 260-380.000.
Murray Corporation: *See*—
Proctor, Robert H.; Hobbs, Arthur G., Jr.; and Argyle, Charles S., 4,614,231, Cl. 165-153.000.
Murray, John M. Truck-trailer antitheft locking system. 4,614,357, Cl. 280-507.000.
Musmann, Hans G.: *See*—
Weidenbruch, Hans U.; and Musmann, Hans G., 4,614,936, Cl. 340-347.0AD.
Muto, Yasutami; and Kohzuki, Kiyoshi, to K.T. Mfg. Co., Ltd. Automatic tightening method and apparatus. 4,614,077, Cl. 53-490.000.
Myokan, Isao: *See*—
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, 4,614,819, Cl. 540-222.000.
N. V. Michel Van De Wiele: *See*—
Debaes, Johnny, 4,614,210, Cl. 139-54.000.
Nabisco Brands, Inc.: *See*—
Karwowski, Jan, 4,614,664, Cl. 426-621.000.
Simelunas, William J.; Aquino, Agostino; and Polifroni, Nicholas, 4,614,154, Cl. 100-116.000.
Nadamoto, Hiroyasu; and Yoinara, Koichi, to Nihon Radiator Co., Ltd. Apparatus for alarming abnormal coolant in space cooling cycle. 4,614,087, Cl. 62-126.000.
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, to Toyama Chemical Co., Ltd. Novel process for producing cephalosporins. 4,614,819, Cl. 540-222.000.
Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Input interface circuit as a buffer of a logic device to improve the signal to noise ratio of the logic device. 4,614,884, Cl. 307-475.000.
Nagano, Ryuzo; Arai, Shinobu; and Matsui, Koji, to Osaka Shipbuilding Co., Ltd. Apparatus for designing a coupler. 4,614,043, Cl. 33-529.000.
Nagare, Arthur T.; Mueller, Wolfgang; Fendya, Thomas J.; and Sestak, Joseph T., to American Sterilizer Company. Device for retaining/ejecting a lamp from a socket and frame. 4,614,015, Cl. 29-239.000.
Nagasawa, Kiyoshi; Kuroyanagi, Mitsuhiro; and Aizawa, Tadashi, to Hashimoto Denki Co., Ltd. Method and apparatus for circulating hot air in board drying apparatus. 4,614,045, Cl. 34-34.000.
Nagata, Tomizou; and Kobayashi, Kazutaka, to Japan Tobacco, Inc. Cigarette arranging apparatus. 4,614,263, Cl. 198-419.000.
Nagata, Toru: *See*—
Suzuki, Toyotosi; and Nagata, Toru, 4,614,416, Cl. 354-400.000.
Nagata, Wataru; Aoki, Tsutomu; and Nishitani, Yasuhiro, to Shionogi & Co., Ltd. Cephalosporin hydroxamic acids. 4,614,797, Cl. 540-226.000.
Nagayama, Kuniaki, to Jeol Ltd. Method of obtaining pseudofiltering effect in process of data accumulation and nuclear magnetic resonance spectrometry utilizing same. 4,614,907, Cl. 324-312.000.
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, to Vasipari Kutato es Fejleszto Vallalat. Process for the removal of contaminating elements from pig-iron, steel, other metals and metal alloys. 4,614,540, Cl. 75-59.130.
Nakabayashi, Masamitsu: *See*—
Hori, Teruo; Nakabayashi, Masamitsu; and Furukawa, Yuzo, 4,614,781, Cl. 525-330.600.
Nakabayashi, Masatoki: *See*—
Kuwahata, Takao; Manabe, Sohei; Gonpei, Katsuhiro; and Nakabayashi, Masatoki, 4,614,891, Cl. 313-386.000.
Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; and Kuriyama, Takashi, 4,614,965, Cl. 358-44.000.
Nakagawa, Kiyotoshi, to Sharp Kabushiki Kaisha. Improved high voltage MOS transistor with field plate layers for preventing reverse field plate effect. 4,614,959, Cl. 357-23.800.
Nakagawa, Koichi: *See*—
Sagara, Iwao; Nakagawa, Koichi; and Hotta, Shintaro, 4,614,144, Cl. 84-1.280.
Nakagawa, Tsuneo: *See*—
Ihara, Kiyohiko; and Nakagawa, Tsuneo, 4,614,276, Cl. 215-364.000.
Nakamura, Kazuharu; and Yoshino, Tooru, to Toyotomi Kogyo Co., Ltd. Heat radiation-type oil burner. 4,614,493, Cl. 431-341.000.
Nakamura, Yasuo: *See*—
Hirai, Koichi; Uda, Taizo; and Nakamura, Yasuo, 4,614,728, Cl. 502-244.000.
Nakano, Hirotaka; and Goto, Tatumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Argon gas laser device. 4,615,033, Cl. 372-99.000.
Nakano, Takayuki: *See*—
Katayama, Shigeru; Nakano, Takayuki; and Takeda, Nobuyuki, 4,614,826, Cl. 549-559.000.
Nakano, Yoshito: *See*—
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,614,954, Cl. 346-160.000.
Nakashima, Nobuyuki: *See*—
Ikenaga, Katsuzi; Takai, Masao; Nakashima, Nobuyuki; and Umemoto, Koji, 4,614,410, Cl. 350-507.000.
Nakata, Yoshiro: *See*—
Masuda, Hitoshi; Takada, Koichi; and Nakata, Yoshiro, 4,614,586, Cl. 210-500.280.
Nanao Corporation: *See*—
Takashima, Yoshiyuki, 4,614,342, Cl. 273-85.0CP.
Napier, John M.: *See*—
Googin, John M.; Napier, John M.; Makarewicz, Mark A.; and Meredith, Paul F., 4,614,592, Cl. 210-679.000.
Nara, Hajime; Kosugi, Kimihiro; and Uryo, Kazunori, to Orient Watch Co., Ltd. Pen type multi-color recording device. 4,614,952, Cl. 346-139.00R.
National Can Corporation: *See*—
Bishop, William B.; Oftelie, David C.; and Selep, M. Victoria, 4,614,531, Cl. 65-158.000.
National Semiconductor Corporation: *See*—
Li, Gabriel M. Y.; Carinalli, Charles P.; and Balakrishnan, Ramanatha V., 4,615,039, Cl. 375-36.000.
Navratil, Frank, Jr.: *See*—
Theisen, Peter J.; Rusenko, James J.; and Navratil, Frank, Jr., 4,614,851, Cl. 200-146.00R.
Nawa, Koichiro: *See*—
Tanikawa, Shinji; and Nawa, Koichiro, 4,614,069, Cl. 52-235.000.
NEC Corporation: *See*—
Inada, Hiroshi; Nomura, Tadashi; and Shimonou, Shigeru, 4,615,023, Cl. 369-32.000.
Mikami, Nobuo; Kamo, Yuichi; and Kojima, Katsuto, 4,614,927, Cl. 335-78.000.
Neefe, Charles W. Method of molding bifocal lenses. 4,614,624, Cl. 264-2.500.
Neeff, Kate, heiress: *See*—
Neeff, Rutger, deceased; Rolf, Meinhard; and Muller, Walter, 4,614,547, Cl. 106-288.00Q.
Neeff, Rutger, deceased (by Neeff, Kate, heiress); Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Azine pigments. 4,614,547, Cl. 106-288.00Q.
Neidig, John D.: *See*—
Kane, Robert P.; Lillie, Edwin D.; and Neidig, John D., 4,614,837, Cl. 174-68.500.
Neiman, Rhoda. Portable index card holder for notebooks. 4,614,450, Cl. 402-79.000.
Nelson, Dale K.: *See*—
Mathison, Allen D.; and Nelson, Dale K., 4,614,206, Cl. 138-93.000.
Nelson, Jon R.: *See*—
Brunius, Robert E.; and Nelson, Jon R., 4,614,945, Cl. 340-870.030.
Nelson, William A. Telescoping strut members and tendons for constructing tensile integrity structures. 4,614,502, Cl. 446-119.000.
Nerstad, Karl A.; and Windish, Willis E., to Caterpillar Inc. Vehicle transmission having countershaft and planetary portions. 4,614,133, Cl. 74-740.000.

Neugebauer, Steffen: *See*—
Dreschmann, Peter; Walter, Wilhelm; Scharting, Gunter; and Neugebauer, Steffen, 4,614,446, Cl. 384-484.000.
Neukomm, Peter, to PEWA Technic AG. Gas engine. 4,614,085, Cl. 60-370.000.
Neumann, Gerhard; and Ramisch, Hans, to Otto Dunkel GmbH Fabrik fur Elektrontechnische Gerate. Method of manufacturing contact spring sockets. 4,614,029, Cl. 29-882.000.
Neville, Roy: *See*—
Webb, Stephen; and Neville, Roy, 4,614,857, Cl. 219-136.000.
New York University: *See*—
Lehneis, Hans R.; and Reibel, Charles, 4,614,518, Cl. 623-39.000.
Newlove, John C.: *See*—
Keener, Ivian G.; Newlove, John C.; Portnoy, Robert C.; Fehler, Daniel F.; and Pober, Kenneth W., 4,614,235, Cl. 166-301.000.
NGK Insulators, Ltd.: *See*—
Tsuno, Nobuo; and Ishida, Yoshihiko, 4,614,453, Cl. 403-30.000.
NGK Spark Plug Co., Ltd.: *See*—
Ando, Minato; Ito, Masaaki; and Mizuno, Fumio, 4,614,725, Cl. 501-136.000.
Ngo, Long V.: *See*—
Kaczeus, Steven; and Ngo, Long V., 4,614,989, Cl. 360-106.000.
Nguyen, Dinh N.: *See*—
Arseneault, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., 4,614,499, Cl. 434-262.000.
Nicholas, Donald C.; and Smith, Gordon C. R., to BXL Plastics Limited. Web stretching apparatus. 4,614,011, Cl. 26-73.000.
Nickisch, Klaus: *See*—
Petzoldt, Karl; Wiechert, Rudolf; Laurent, Henry; Nickisch, Klaus; and Bittler, Dieter, 4,614,616, Cl. 540-4.000.
Niemeijer, Halbe J., to Tatoprint Nederland B.V. Locking seal and seal element therefor. 4,614,373, Cl. 292-318.000.
Nifco Inc.: *See*—
Oshida, Tsutomu, 4,614,004, Cl. 16-82.000.
Nihon Kogyo Kabushiki Kaisha: *See*—
Okubo, Toshikazu; Mori, Yasuo; and Kasai, Shunichi, 4,614,568, Cl. 204-29.000.
Nihon Radiator Co., Ltd.: *See*—
Nadamoto, Hiroyasu; and Yoinara, Koichi, 4,614,087, Cl. 62-126.000.
Tsukuda, Takaaki; Hata, Toyohiko; and Fujisaki, Akira, 4,614,929, Cl. 335-284.000.
Nihon Tokushu Noyaku Seizo, K.K.: *See*—
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,614,536, Cl. 71-94.000.
Ninomiya, Takeshi; and Suzuki, Hideto, to Sony Corporation. Magnetic recording and reproducing apparatus for recording and reproducing a video signal obtained from a high speed scanning video camera. 4,614,980, Cl. 358-335.000.
Nippon Electric Co., Ltd.: *See*—
Hirano, Nariaki, 4,615,006, Cl. 364-200.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Chibana, Masanobu, 4,614,145, Cl. 84-345.000.
Nippon Kogaku K.K.: *See*—
Kawahara, Atsushi; Ota, Tadashi; Kuroiwa, Toshihisa; Isogai, Masaki; Takatsu, Norihiko; and Kawamura, Koichiro, 4,614,977, Cl. 358-260.000.
Nippon Light Metal Company Limited: *See*—
Matsushita, Kenyo; and Ishida, Hiroshi, 4,614,852, Cl. 219-10.49R.
Nippon Petrochemicals Company, Limited: *See*—
Kezuka, Seiju; Yoshimura, Tsuneo; Kato, Tadayoshi; and Iida, Moriya, 4,614,632, Cl. 264-280.000.
Nippon Prestressed Concrete Co., Ltd.: *See*—
Yamashita, Kiichi; Tanizawa, Junpei; and Iwasaki, Takao, 4,614,324, Cl. 249-11.000.
Nippon Seiki Co., Ltd.: *See*—
Matsumoto, Katsutake; and Yachida, Yoichi, 4,614,114, Cl. 73-313.000.
Motoi, Etsuo, 4,614,406, Cl. 350-334.000.
Nippon Seiko Kabushiki Kaisha: *See*—
Okoshi, Hideo, 4,614,125, Cl. 74-200.000.
Nippon Shinyaku Co., Ltd.: *See*—
Kawamata, Masanobu; Ushimaru, Koichi; and Yamane, Shuji, 4,614,796, Cl. 536-5.000.
Nippon Soken, Inc.: *See*—
Matsumoto, Muneaki; and Kanno, Sukeyasu, 4,614,932, Cl. 340-52.00B.
Nippon Steel Corporation: *See*—
Furukawa, Takashi; Endo, Michio; Takemoto, Nagayasu; and Watanabe, Kunio, 4,614,551, Cl. 148-12.00F.
Taniguchi, Yasuyuki; Yoshida, Kotaro; Takeshi, Yasuhira; Michishita, Teruo; Kawai, Michio; and Kawakami, Makoto, 4,614,461, Cl. 405-211.000.
Nippon Zenith Pipe Co., Ltd.: *See*—
Yamashita, Kiichi; Tanizawa, Junpei; and Iwasaki, Takao, 4,614,324, Cl. 249-11.000.
Nippon Zeon Co., Ltd.: *See*—
Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, 4,614,771, Cl. 525-351.000.
Watanabe, Noboru; Shomoda, Hideyoshi; and Kubo, Yoichiro, 4,614,779, Cl. 525-199.000.
Nirasawa, Kazuo: *See*—
Yamazaki, Shigeru; Nirasawa, Kazuo; and Nishimori, Sinji, 4,614,904, Cl. 318-793.000.
Nishida, Masami: *See*—
Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, 4,614,934, Cl. 40-347.0DA.
Nishikawa, Kazuo: *See*—
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.
Nishikori, Yoji, to Mitsuboshi Belting Ltd. Polyurethane toothed belt structure. 4,614,510, Cl. 474-205.000.
Nishimatsu, Masaharu; Ide, Toshiaki; Saito, Yoshiaki; and Kubota, Yuichi, to TDK Corporation. Magnetic recording medium. 4,614,687, Cl. 428-329.000.
Nishimori, Sinji: *See*—
Yamazaki, Shigeru; Nirasawa, Kazuo; and Nishimori, Sinji, 4,614,904, Cl. 318-793.000.
Nishimura, Keizo: *See*—
Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, 4,614,934, Cl. 40-347.0DA.
Nishitani, Toshiyuki: *See*—
Seino, Hajime; Uchibori, Tsuyoshi; Inamasu, Sachiko; and Nishitani, Toshiyuki, 4,614,718, Cl. 435-72.000.
Nishitani, Yasuhiro: *See*—
Nagata, Wataru; Aoki, Tsutomu; and Nishitani, Yasuhiro, 4,614,797, Cl. 540-226.000.
Nishiwaki, Hiroshi: *See*—
Kakihana, Kazumasa; and Nishiwaki, Hiroshi, 4,614,094, Cl. 66-170.000.
Nishiwaki, Shoji: *See*—
Suzaki, Masayuki; Nishiwaki, Shoji; and Hayashima, Toshitaka, 4,614,448, Cl. 400-208.000.
Nishiyama, Haruo, to Sharp Kabushiki Kaisha. Duplicating-sheet-number setting device. 4,614,421, Cl. 355-14.0CU.
Nishizawa, Hiroshi; Kasai, Shozo; Okada, Yasunori; Osada, Yuichi; and Mukoyama, Yoshiyuki, to Hitachi Chemical Company, Ltd. Heat resistant resin composition. 4,614,782, Cl. 525-424.000.
Nissan Motor Company, Limited: *See*—
Eguchi, Shinsuke, 4,614,259, Cl. 192-70.110.
Furukawa, Osamu, 4,614,253, Cl. 187-9.00E.
Sakata, Tetsushin, 4,614,506, Cl. 464-162.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Sekimoto, Yukihiko; Yanagida, Makoto; and Kanda, Shoichi, 4,614,601, Cl. 252-8.551.
Niwa, Toshio; Murata, Yukichi; and Maeda, Shuichi, to Mitsubishi Chemical Industries Limited. Transfer recording method using reactive sublimable dyes. 4,614,521, Cl. 8-471.000.
NL Industries, Inc.: *See*—
Bates, H. John, 4,614,148, Cl. 91-420.000.
Noguchi, Kohkichi: *See*—
Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, 4,614,771, Cl. 525-351.000.
Noguchi, Takaharu: *See*—
Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, 4,614,934, Cl. 40-347.0DA.
Nomura, Tadashi: *See*—
Inada, Hiroshi; Nomura, Tadashi; and Shimonou, Shigeru, 4,615,023, Cl. 369-32.000.
Nonogaki, Saburo: *See*—
Matsuzawa, Toshiharu; Iwayanagi, Takao; Douta, Kikuo; Yanazawa, Hiroshi; Kohashi, Takahiro; and Nonogaki, Saburo, 4,614,706, Cl. 430-313.000.
Norddeutsche Affinerie AG: *See*—
Ploss, Hartmut; and Lehne, Jurgen, 4,614,640, Cl. 423-35.000.
Norddeutsche Affinerie Aktiengesellschaft: *See*—
Berndt, Gerhard; and Marnette, Werner, 4,614,541, Cl. 75-74.000.
Nordmeyer, Friedrich: *See*—
Ambrosi, Luciano; von Ploetz, Klaus; Zangs, Ludger; and Nordmeyer, Friedrich, 4,615,036, Cl. 373-93.000.
Noreen, Allen L.: *See*—
Larson, James M.; and Noreen, Allen L., 4,614,667, Cl. 427-54.100.
Norgren, Kent S.: *See*—
Finlay, David E.; Norgren, Kent S.; and Shook, Frankie S., 4,615,017, Cl. 364-900.000.
Norin, Mats, to Pressmaster Tool AB. Tool. 4,614,107, Cl. 72-402.000.
North American Philips Consumer Electronics Corp.: *See*—
Josephs, Mark A.; Milikovsky, Roman; Penird, Carl W.; and Rehkopf, Charles H., 4,614,896, Cl. 313-481.000.
North, Vaughn W.; and Elggren, Richard W., to EXACTident, Inc. Nail identification wafer. 4,614,366, Cl. 283-70.000.
Northern Telecom Limited: *See*—
Koskinen, Leslie M., 4,615,041, Cl. 375-114.000.
Norton Christensen, Inc.: *See*—
Jurgens, Rainer; and Biehl, Johann, 4,614,232, Cl. 166-105.500.
Noto, Kunihiro: *See*—
Fukasaku, Yoshinori; Hashimoto, Katsuhiko; and Noto, Kunihiro, 4,614,152, Cl. 98-2.000.
Novo Industri A/S: *See*—
Hansen, Philip E.; Brange, Jens J. V.; and Havelund, Svend, 4,614,730, Cl. 514-3.000.
Nozawa, Kozo: *See*—
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kozo; and Hattori, Sadami, 4,614,880, Cl. 307-200.00A.

Nozawa, Yasuji: *See—*
Morita, Isamu; Nozawa, Yasuji; and Maru, Hideki, 4,614,255, Cl. 188-315.000.
Nymark, R. Paul: *See—*
Helde, Oscar, 4,614,158, Cl. 104-172.00S.
Nyrup, John: *See—*
Hansen, Henning M.; Jacobsen, Hans E.; Lassithiotakis, Konstantin; and Nyrup, John, 4,614,121, Cl. 73-861.120.
Oates, Otto G. Collapsible portable enema seat. 4,613,994, Cl. 4-480.000.
Obara, Haruki; and Izumiya, Shunzo, to Fanuc Ltd. Wire EDM control circuit for rough and finished machining. 4,614,854, Cl. 219-69.00C.
Obssuth, George A. Contact lens. 4,614,413, Cl. 351-161.000.
Ochiai, Eturo: *See—*
Yamaguchi, Keisuke; and Ochiai, Eturo, 4,614,286, Cl. 222-505.000.
Ochiai, Hirokazu: *See—*
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, 4,614,819, Cl. 540-222.000.
O'Connor, Patrick G. Interchangeable game board. 4,614,344, Cl. 273-283.000.
Oda, Hidekuni: *See—*
Kajiura, Hirokazu; Oda, Hidekuni; and Minami, Syuji, 4,614,778, Cl. 526-281.000.
O'Donnell, Edward J.: *See—*
Watkins, David R.; and O'Donnell, Edward J., 4,614,236, Cl. 166-304.000.
Oftelie, David C.: *See—*
Bishop, William B.; Oftelie, David C.; and Selep, M. Victoria, 4,614,531, Cl. 65-158.000.
Ogata, Minoru, to Canon Kabushiki Kaisha. Document reader. 4,614,976, Cl. 358-257.000.
Ogunbiyi, Lai; Riedhammer, Thomas M.; and Smith, Francis X., to Bausch & Lomb Incorporated. Method for enzymatic cleaning and disinfecting contact lenses. 4,614,549, Cl. 134-19.000.
Ohara, Minoru: *See—*
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Ohara, Minoru; Kobayashi, Akira; and Akatsu, Tsuneo, 4,614,733, Cl. 514-54.000.
O'Hare, Thomas E.: *See—*
Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,614,749, Cl. 518-700.000.
Ohki, Nobuaki: *See—*
Shirasawa, Hisato; Sengoku, Norio; and Ohki, Nobuaki, 4,614,559, Cl. 156-182.000.
Ohki, Nobutaka: *See—*
Fujita, Munehisa; Hayashi, Yasuhiro; Ozawa, Takashi; and Ohki, Nobutaka, 4,614,707, Cl. 430-379.000.
Ohshima, Yoshimasa: *See—*
Hara, Yasuhiko; Ohshima, Yoshimasa; Fushimi, Satoru; and Makihira, Hiroshi, 4,614,430, Cl. 356-394.000.
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, to Casio Computer Co., Ltd.; and Casio Electronics Mfg. Co. Ltd. Recording apparatus. 4,614,954, Cl. 346-160.000.
Ohta, Yosinobu: *See—*
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.
Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,614,270, Cl. 206-389.000.
Oka, Tateki; and Uchimoto, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Developing method for developing electrostatic latent image. 4,614,697, Cl. 430-103.000.
Okabe, Masao: *See—*
Sugio, Akitoshi; Okabe, Masao; and Amagai, Akikazu, 4,614,773, Cl. 525-391.000.
Okada, Tetsuji: *See—*
Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, 4,614,230, Cl. 165-151.000.
Okada, Yasunori: *See—*
Nishizawa, Hiroshi; Kasai, Shozo; Okada, Yasunori; Osada, Yuichi; and Mukoyama, Yoshiyuki, 4,614,782, Cl. 525-424.000.
Okamoto, Tetsuo: *See—*
Sugiura, Saburo; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,614,159, Cl. 110-261.000.
OKI Electric Industry Co. Ltd.: *See—*
Kumagai, Yutaka, 4,615,030, Cl. 371-71.000.
Sagara, Iwao; Nakagawa, Koichi; and Hotta, Shintaro, 4,614,144, Cl. 84-1.280.
Okimoto, Haruo; and Matsuda, Ikuo, to Mazda Motor Corporation. Intake system for rotary piston engine. 4,614,173, Cl. 123-216.000.
Okino, Yoshinori: *See—*
Tanigawa, Yoshitaka; and Okino, Yoshinori, 4,614,174, Cl. 123-478.000.
Okoshi, Hideo, to Nippon Seiko Kabushiki Kaisha. Infinitely variable traction roller transmission. 4,614,125, Cl. 74-200.000.
Okubo, Toshikazu; Mori, Yasuo; and Kasai, Shunichi, to Nihon Kogyo Kabushiki Kaisha. High-speed silver plating and baths therefor. 4,614,568, Cl. 204-29.000.
Okunishi, Toshifumi: *See—*
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., to Hewlett-Packard Company. Self-contained electronic computer including means for immediately executing or storing alphanumeric statements entered into the computer. 4,615,015, Cl. 364-706.000.
Olbrich, Jurgen; and Dorffel, Jorg, to Huels Aktiengeselischaft. Process for reacting maleic anhydride with vinylbenzenes. 4,614,808, Cl. 549-236.000.
Oldweiler, Morey E., to Exxon Research & Engineering Co. Method and apparatus for efficient recovery of heat from hot gases that tend to foul heat exchanger tubes. 4,614,229, Cl. 165-115.000.
Olenwine, Ronald G., to Draper Corporation. Shedding mechanism for weaving looms. 4,614,212, Cl. 139-79.000.
Olin Corporation: *See—*
Grelle, Peter F.; and Urs, Venkataramaraj S., 4,614,157, Cl. 102-466.000.
Olivieri, Angelo F.: *See—*
Mojoli, Luigi F.; and Olivieri, Angelo F., 4,615,040, Cl. 375-40.000.
Ollinger, Janet: *See—*
Smolanoff, Joel R.; Fitzpatrick, J. Michael; and Ollinger, Janet, 4,614,734, Cl. 514-101.000.
Olsson, Sten Y., to Ingeniorsfirman Petrokraft AB. Burner for burning pulverulent fuel. 4,614,492, Cl. 431-284.000.
Olympus Optical Co., Ltd.: *See—*
Hayashi, Asao, 4,614,865, Cl. 250-201.000.
Yunoki, Yutaka; and Kimura, Kenji, 4,614,966, Cl. 358-44.000.
Omi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Brake booster device. 4,614,149, Cl. 92-98.00D.
Omron Tateisi Electronics Co.: *See—*
Mikami, Kazuo; Satoh, Fumihiko; and Shimura, Mikihiko, 4,614,958, Cl. 357-19.000.
Omura, Ichie: *See—*
Hashino, Tomiko; and Omura, Ichie, 4,614,655, Cl. 426-49.000.
Ona, Isao; and Ozaki, Masaru, to Toray Silicone Co., Ltd. Antimicrobic, antistatic siloxane compositions and method for treating materials. 4,614,675, Cl. 427-387.000.
Onodera, Kaoru: *See—*
Sasaki, Masao; and Onodera, Kaoru, 4,614,709, Cl. 430-546.000.
Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, 4,614,710, Cl. 430-549.000.
Onodera, Toshihiro; Tanaka, Shigeru; and Matsumoto, Sunao, to Kabushiki Kaisha Toshiba. High voltage pulsed power supply with time limiting nonlinear feedback. 4,614,999, Cl. 363-28.000.
Orient Watch Co., Ltd.: *See—*
Nara, Hajime; Kosugi, Kimihiro; and Uryo, Kazunori, 4,614,952, Cl. 346-139.00R.
Oroskar, Anil R., to UOP Inc. Rotary valve with two seating surfaces for interconnecting conduits. 4,614,205, Cl. 137-625.110.
Ortho Pharmaceutical Corporation: *See—*
Kung, Patrick C.; and Goldstein, Gideon, 4,614,720, Cl. 435-240.000.
Orvosi Muszerszovetkezet: *See—*
Harlt, Janos; and Hancz, Laszlo , 4,614,178, Cl. 128-24.00A.
Osada, Mitsuo: *See—*
Kuroishi, Nobuhito; Osada, Mitsuo; and Hara, Akio, 4,614,638, Cl. 419-39.000.
Osada, Yuichi: *See—*
Nishizawa, Hiroshi; Kasai, Shozo; Okada, Yasunori; Osada, Yuichi; and Mukoyama, Yoshiyuki, 4,614,782, Cl. 525-424.000.
Osaka Shipbuilding Co., Ltd.: *See—*
Nagano, Ryuzo; Arai, Shinobu; and Matsui, Koji, 4,614,043, Cl. 33-529.000.
Osato, Yoichi; Saito, Ichiro; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Optical recording medium. 4,614,951, Cl. 346-135.100.
Osawa, Toru; and Kitazawa, Yoichi, to Bridgestone Tire Co., Ltd. Pneumatic tires for high-speed running type motorcycles. 4,614,215, Cl. 152-527.000.
Oshida, Tsutomu, to Nifco Inc. Oil filled rotary damper having a symmetrically shaped flexible membrane. 4,614,004, Cl. 16-82.000.
Oshima, Yoshimasa: *See—*
Koizumi, Mitsuyoshi; Oshima, Yoshimasa; Akiyama, Nobuyuki; and Yachi, Toshiaki, 4,614,427, Cl. 356-237.000.
Osterberg, Jorj O. Device for testing the load-bearing capacity of concrete-filled earthen shafts. 4,614,110, Cl. 73-84.000.
Ota, Tadashi: *See—*
Kawahara, Atsushi; Ota, Tadashi; Kuroiwa, Toshihisa; Isogai, Masaki; Takatsu, Norihiko; and Kawamura, Koichiro, 4,614,977, Cl. 358-260.000.
Otto Dunkel GmbH Fabrik fur Elektrontechnische Gerate: *See—*
Neumann, Gerhard; and Ramisch, Hans, 4,614,029, Cl. 29-882.000.
Outboard Marine Corporation: *See—*
Heismann, Richard A.; and Pendry, Warren W., 4,614,130, Cl. 74-501.00R.
Overath, Friedhelm; and Saner, Remo, to Georg Fischer Aktiengesellschaft. Connector assembly for fiber-reinforced plastic pipe members. 4,614,369, Cl. 285-55.000.
Owen, Dennis W.: *See—*
Smith, Albert C.; and Owen, Dennis W., 4,614,555, Cl. 156-64.000.
Owens-Corning Fiberglas Corporation: *See—*
Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, 4,614,790, Cl. 528-191.000.
Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, 4,614,791, Cl. 528-193.000.
Owens-Illinois, Inc.: *See—*
Krall, Thomas J., 4,614,018, Cl. 29-33.00J.
Oy E. Sarlin AB: *See—*
Sarvanne, Hannu, 4,614,478, Cl. 416-19.000.
Ozaki, Masaru: *See—*
Ona, Isao; and Ozaki, Masaru, 4,614,675, Cl. 427-387.000.

Ozawa, Takashi: *See*—
Fujita, Munehisa; Hayashi, Yasuhiro; Ozawa, Takashi; and Ohki, Nobutaka, 4,614,707, Cl. 430-379.000.
Pacon Manufacturing Corp.: *See*—
Mayer, Nathan, 4,614,000, Cl. 5-484.000.
Padliya, Dilipkumar: *See*—
Edwards, Douglas C.; and Padliya, Dilipkumar, 4,614,772, Cl. 525-388.000.
Pain Suppression Labs, Inc.: *See*—
Liss, Saul; and Liss, Bernard, 4,614,193, Cl. 128-419.00R.
Liss, Saul; Liss, Bernard S.; Krakower, Sam; and Feygin, Ilya, 4,614,866, Cl. 250-214.00A.
Palframan, John D.: *See*—
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.
Palosi, Eva: *See*—
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.
Panetta, Pascal; and Tromelin, Jacques, to Schlumberger Technology Corp. Logging method and apparatus using a sonde equipped with measuring pads. 4,614,250, Cl. 181-102.000.
Papp, David J. Adjustable plumbing cleanout. 4,614,065, Cl. 52-20.000.
PaR Systems Corp.: *See*—
LaValle, Dean R.; and McLain, Philip A., 4,614,274, Cl. 212-160.000.
Park, Chang-Man: *See*—
Valcho, Joseph J.; Slama, Francis J.; Strukl, Joseph S.; and Park, Chang-Man, 4,614,602, Cl. 252-33.300.
Parker, Wayne C.; and May, John W., to Digital Equipment Corporation. Bus transceiver including compensation circuit for variations in electrical characteristics of components. 4,614,882, Cl. 307-443.000.
Pasula, Mark J. Method and apparatus for measuring the degree of reaction between antigens and leukocyte cellular antibodies. 4,614,722, Cl. 436-501.000.
Patt, William C.: *See*—
Hamilton, Harriet W.; Patt, William C.; and Trivedi, Bharat K., 4,614,732, Cl. 514-46.000.
Patz, Herbert S., to Xerox Corporation. Pre-development inductive charging of developer material. 4,614,419, Cl. 355-3.0DD.
Pavlov, Leonidas P.; and Aba-Jbara, Nabil M., to Intellicard International, Inc. Unitary, self-contained card verification and validation system and method. 4,614,861, Cl. 235-380.000.
Payen International Limited: *See*—
Bate, Cecil A.; and Robinson, Kay, 4,614,554, Cl. 156-62.200.
Pazzaglia, Luigi, to CEFIN S.p.A. Shaping device for cylindrical containers for use with a continuous welder. 4,614,293, Cl. 228-17.000.
Peerless Confection Company: *See*—
Wilson, James E.; and Chalmers, Alexander J., 4,614,658, Cl. 426-103.000.
Peers-Trevarton, Charles A., to Cordis Corporation. Quick connector to medical electrical lead. 4,614,395, Cl. 339-97.00R.
Pellegrini, Rinaldo: *See*—
Bellani, Piero; Clavenna, Gaetano; and Pellegrini, Rinaldo, 4,614,744, Cl. 514-277.000.
Pelletier, Jean L.; Moreau, Michel; and Bocquet, Michel, to Societe d'Etudes et de Recherches de l'Ecole Nationale Superieure d'Arts et Metiers Seram. Ultrasonic process and apparatus for monitoring and measuring the evolution with time of physico-chemical, biological or bacteriological phenomena. 4,614,115, Cl. 73-599.000.
Pelster, Bernhard: *See*—
Dell, Hans-Dieter; Pelster, Bernhard; Kraus, Reinhold; and Schierstedt, Detlef, 4,614,741, Cl. 514-222.000.
Pelzer, Jozef B.: *See*—
Gerkema, Jan; and Pelzer, Jozef B., 4,614,445, Cl. 384-368.000.
Pendry, Warren W.: *See*—
Heismann, Richard A.; and Pendry, Warren W., 4,614,130, Cl. 74-501.00R.
Penird, Carl W.: *See*—
Josephs, Mark A.; Milikovsky, Roman; Penird, Carl W.; and Rehkopf, Charles H., 4,614,896, Cl. 313-481.000.
Pennace, John R.; and Quinn, Sharon A., to Flexcon Company, Inc. Silicone release layers, laminates and methods. 4,614,677, Cl. 428-40.000.
Pennwalt Corporation: *See*—
Georgiev, Vassil S.; Mack, Robert A.; and Kinsolving, Clyde R., 4,614,810, Cl. 549-479.000.
Perkin-Elmer Corporation, The: *See*—
Wu, Frederick Y., 4,614,864, Cl. 250-201.000.
Perler, Robert F. Skin-cooling probe. 4,614,191, Cl. 128-399.000.
Pertle, John E., to Tri-Tool. Angularly adjustable mandrel assembly. 4,614,136, Cl. 82-44.000.
Pesa, Frederick: *See*—
Attig, Thomas G.; Graham, Anne M.; and Pesa, Frederick, 4,614,750, Cl. 518-713.000.
Peters, Rex B.: *See*—
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,614,040, Cl. 33-312.000.
Petersson, Bo A. O.; Hansson, Leif T.; and Samsioe, Per-Edward, to Telefonaktiebolaget LM Ericsson. Charging regulator. 4,614,905, Cl. 320-18.000.
Pethes, Andras: *See*—
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, 4,614,540, Cl. 75-59.130.
Pettersen, Karl Johan: *See*—
Helde, Oscar, 4,614,158, Cl. 104-172.00S.
Petzoldt, Karl; Wiechert, Rudolf; Laurent, Henry; Nickisch, Klaus; and Bittler, Dieter, to Schering Aktiengesellschaft. Process for preparing 3β7β-dihydroxy-Δ5-steroids. 4,614,616, Cl. 540-4.000.
PEWA Technic AG: *See*—
Neukomm, Peter, 4,614,085, Cl. 60-370.000.
Pfisterer, Dieter: *See*—
Fivaz, Robert; Pfisterer, Dieter; and Sigg, Hans, 4,614,038, Cl. 33-149.00J.
Pfizer Inc.: *See*—
Hamanaka, Ernest S., 4,614,737, Cl. 514-193.000.
Philion, Richard E., to Sterling Drug Inc. Esterification process. 4,614,830, Cl. 560-109.000.
Picou, Ken. Portable reversible chair apparatus. 4,614,378, Cl. 297-92.000.
Pierschbacher, Michael: *See*—
Ruoslahti, Erkki; and Pierschbacher, Michael, 4,614,517, Cl. 623-11.000.
Pilkington Brothers P.L.C.: *See*—
Brunt, William H.; and Wilson, Christopher J., 4,614,439, Cl. 366-154.000.
Pinto, Patrick A.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A ; and Versace, Richard W., 4,614,738, Cl. 514-194.000.
Pioneer Electronic Corporation: *See*—
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kozo; and Hattori, Sadami, 4,614,880, Cl. 307-200.00A.
Piper, James A.: *See*—
Stanco, Alexei; and Piper, James A., 4,614,190, Cl. 128-395.000.
Pischinger, Franz; and Kreuter, Peter, to Fev Forschungsgesellschaft fur Energietechnik und Verbrennungsmotoren mbH. Method of starting a valve regulating apparatus for displacement-type machines. 4,614,170, Cl. 123-90.110.
Pistoresi, Denis J.: *See*—
Brandenberg, Werner M.; and Pistoresi, Denis J., 4,614,405, Cl. 350-286.000.
Pittway Corporation: *See*—
Weitman, Irwin, 4,614,938, Cl. 340-567.000.
Plaquin, Bernard: *See*—
Fradin, Louis; Plaquin, Bernard; and Salkin, Herve , 4,614,120, Cl. 73-761.000.
Plasse, Paul A., to Polaroid Corporation. Process for making laminar batteries. 4,614,026, Cl. 29-623.300.
Plassmeier, Klaus: *See*—
Frank, Martin; and Plassmeier, Klaus, 4,614,091, Cl. 62-384.000.
Plastifol-Manfred Rothe KG.: *See*—
Kobe, Michael, 4,614,558, Cl. 156-163.000.
Plessey Overseas Limited: *See*—
Brettle, Jack; and Goosey, Martin T., 4,614,963, Cl. 357-72.000.
Pliefke, Engelbert, to Hoechst Aktiengesellschaft. Single-stage electrochemical image-forming process for reproduction layers. 4,614,570, Cl. 204-129.650.
Pliefke, Engelbert, to Hoechst Aktiengesellschaft. Process for electrochemically graining steel plates used as offset printing plate supports, and an electrolyte solution suitable for the process. 4,614,571, Cl. 204-129.750.
Ploss, Hartmut; and Lehne, Jurgen, to Norddeutsche Affinerie AG. Process of producing copper (II) hydroxide. 4,614,640, Cl. 423-35.000.
Pluim, Arthur W., Jr., to Minnesota Mining and Manufacturing Co. Mold having ceramic insert, method for injection molding using the same. 4,614,630, Cl. 264-219.000.
Plummer, Mark A.: *See*—
Schroeder, Donald E., Jr.; Plummer, Mark A.; and Zimmerman, Carle C., Jr., 4,614,623, Cl. 260-505.00R.
Pober, Kenneth W.: *See*—
Kraner, Ivian G.; Newlove, John C.; Portnoy, Robert C.; Fehler, Daniel F.; and Pober, Kenneth W., 4,614,235, Cl. 166-301.000.
Pointner, Manfred: *See*—
Knesewitsch, Jakob; and Pointner, Manfred, 4,614,877, Cl. 307-64.000.
Polansky, Carl; and Hawrylo, Frank Z., to RCA Corporation. Die bonder with electrically driven scrubbing means. 4,614,292, Cl. 228-1.100.
Polaroid Corporation: *See*—
Plasse, Paul A., 4,614,026, Cl. 29-623.300.
POLI-MAK S.p.A.: *See*—
Welch, Henry H.; and Felici, Corindo, 4,614,434, Cl. 356-418.000.
Polifroni, Nicholas: *See*—
Simelunas, William J.; Aquino, Agostino; and Polifroni, Nicholas, 4,614,154, Cl. 100-116.000.
Polley, Bradford L.; and Priester, Gary P., to General Dynamics, Electronics Division. Cable carrier/retractor. 4,614,383, Cl. 312-273.000.
Polysar Limited: *See*—
Edwards, Douglas C.; and Padliya, Dilipkumar, 4,614,772, Cl. 525-388.000.
Poncy, George W. Thermometer sheath package for electronic thermometers. 4,614,442, Cl. 374-158.000.

Popp, Karl F.: *See—*
Gorman, William G.; Popp, Karl F.; and Mavica, Kenneth M., 4,614,649, Cl. 424-54.000.
Porat, Itzchak, to Guilford Mills, Inc. Method and apparatus for operating warp knitting machines. 4,614,095, Cl. 66-207.000.
Portalupi, Steven J.: *See—*
Chlebina, Lawrence E.; Portalupi, Steven J.; and Smith, Michael W., 4,614,268, Cl. 206-304.000.
Portnoy, Robert C.: *See—*
Keener, Ivian G.; Newlove, John C.; Portnoy, Robert C.; Fehler, Daniel F.; and Pober, Kenneth W., 4,614,235, Cl. 166-301.000.
Poujois, Robert, to Commissariat a l'Energie Atomique. Capacitive keyboard structure. 4,614,937, Cl. 340-365.00C.
Powell, Francis R., to AMP Incorporated. Connector socket for printed circuit boards. 4,614,388, Cl. 339-17.00C.
Powers, John W.: *See—*
Copeland, Harry J.; and Powers, John W., 4,614,425, Cl. 355-99.000.
PPG Industries, Inc.: *See—*
Kania, Charles M., 4,614,777, Cl. 526-279.000.
Schimmel, Karl F.; Prucnal, Paul J.; Camp, Douglas R.; and Tiedt, John W., 4,614,766, Cl. 525-104.000.
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Kerivan, Leo, 4,614,508, Cl. 474-153.000.
Preis, Lothar: *See—*
Ebneth, Harold; Preis, Lothar; Giesecke, Henning; and Wolf, Gerhard D., 4,614,684, Cl. 428-252.000.
Prenco AG: *See—*
Kochli, Walter, 4,614,295, Cl. 228-53.000.
Pressmaster Tool AB: *See—*
Norin, Mats, 4,614,107, Cl. 72-402.000.
Price, Edison A.; and Bengochea, Fulgencio V., to Edison Price, Inc. Drop-ceiling support system. 4,614,072, Cl. 52-484.000.
Priem, Jan J.: *See—*
Timmerman, Daniel M.; Priem, Jan J.; and Janssens, Wilhelmus, 4,614,708, Cl. 430-517.000.
Priesnitz, Uwe: *See—*
Riebel, Hans-Jochem; Eue, Ludwig; Faust, Wilfried; and Priesnitz, Uwe, 4,614,537, Cl. 71-94.000.
Priester, Gary P.: *See—*
Polley, Bradford L.; and Priester, Gary P., 4,614,383, Cl. 312-273.000.
Procter & Gamble Company, The: *See—*
Farrington, Theodore E., Jr.; Spahni, Milton D.; and Rattray, Thomas, 4,614,679, Cl. 428-138.000.
Proctor, Robert H.; Hobbs, Arthur G., Jr.; and Argyle, Charles S., to Murray Corporation. Evaporators. 4,614,231, Cl. 165-153.000.
Prohaska, Hans: *See—*
Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, 4,614,903, Cl. 318-443.000.
Propane Carburetion Systems, Inc.: *See—*
Batchelor, William H., 4,614,168, Cl. 123-27.0GE.
Prototech Company: *See—*
Juda, Walter; and Ilan, Amiram B., 4,614,575, Cl. 204-265.000.
Prucnal, Paul J.: *See—*
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Pulford, Stephen M.: *See—*
Marans, Nelson S.; and Pulford, Stephen M., 4,614,762, Cl. 525-61.000.
Pullinen, Martti: *See—*
Koponen, Martti; Pullinen, Martti; Koski, Erkki; and Koskimies, Jouni, 4,614,566, Cl. 162-301.000.
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Ault, John C., 4,614,879, Cl. 307-130.000.
PUMA-Sportschuhfabriken Rudolf Dassler KG: *See—*
Dassler, Armin A., 4,614,046, Cl. 36-30.00R.
Purac Aktiebolag: *See—*
Andersson, Per-Erik; and Welander, Thomas G., 4,614,587, Cl. 210-603.000.
Puri, Rajen, to Standard Oil Company. Method of recovering coal values by combining underground coal gasification with surface coal liquefaction. 4,614,234, Cl. 166-261.000.
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Sheng, Yung-Bool D.; and Widicus, Warren A., 4,614,657, Cl. 426-96.000.
Quick, Hans G.: *See—*
Fuchs, Gerhard; Hertenstein, Roland R.; and Quick, Hans G., 4,614,752, Cl. 521-44.500.
Quinn, Sharon A.: *See—*
Pennace, John R.; and Quinn, Sharon A., 4,614,677, Cl. 428-40.000.
Quodala, Genaro M.: *See—*
Walters, Paul W.; Raiche, H. Anthony; Harness, Ronald L.; and Quodala, Genaro M., 4,614,726, Cl. 502-41.000.
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Betsch, Helmut; Bierent, Walter; Gille, Gunther; Goertler, Horst; Prohaska, Hans; and Rachner, Horst, 4,614,903, Cl. 318-443.000.
Radway, Ronald F., to Snapper, Inc. Golf swing training device. 4,614,343, Cl. 273-186.00A.
Raiche, H. Anthony: *See—*
Walters, Paul W.; Raiche, H. Anthony; Harness, Ronald L.; and Quodala, Genaro M., 4,614,726, Cl. 502-41.000.
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Ramaswamy, Setlur R., to D.D. Williamson & Co., Inc. Fast cook-continuous process for production of ammonia caramel color. 4,614,662, Cl. 426-540.000.
Ramisch, Hans: *See—*
Neumann, Gerhard; and Ramisch, Hans, 4,614,029, Cl. 29-882.000.
Rammos, Emmanuel, to U.S. Philips Corporation. Planar high-frequency antenna having a network of fully suspended-substrate microstrip transmission lines. 4,614,947, Cl. 343-778.000.
Rand McNally & Co.: *See—*
Breen, Thomas J.; and Slowik, Sylvester H., 4,614,362, Cl. 282-9.00R.
Breen, Thomas J., 4,614,363, Cl. 282-22.00R.
Breen, Thomas J., 4,614,367, Cl. 283-102.000.
Rath, Dieter; and Seeck, Peter, to Intermedicat GmbH. Dialysis apparatus and method for its control. 4,614,590, Cl. 210-637.000.
Rathemacher, John W., to Becton, Dickinson and Company. Flexible packaging apparatus and method. 4,614,076, Cl. 53-433.000.
Rathnam, Jayaseelan: *See—*
Hsiung, Du Y.; Branch, Billye J.; and Rathnam, Jayaseelan, 4,614,200, Cl. 132-7.000.
Rattman, William J.; Marchetti, Stephen; and Galvin, Aaron A., to American District Telegraph Company. Contrast smoke detector. 4,614,968, Cl. 358-93.000.
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Farrington, Theodore E., Jr.; Spahni, Milton D.; and Rattray, Thomas, 4,614,679, Cl. 428-138.000.
Raudenbusch, Werner T.: *See—*
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Ravaux, Gilles: *See—*
Le Barny, Pierre; Dubois, Jean C.; and Ravaux, Gilles, 4,614,608, Cl. 252-299.640.
Raychem Corporation: *See—*
Wille, Marc; Verhoeven, Rik; and Van Emelen, Rik, 4,614,557, Cl. 156-85.000.
Raymond, A.: *See—*
Andre, Guy, 4,614,321, Cl. 248-74.200.
RBS Pharma (Roger Bellon Schoum) S.p.A.: *See—*
Bellani, Piero; Clavenna, Gaetano; and Pellegrini, Rinaldo, 4,614,744, Cl. 514-277.000.
RCA Corporation: *See—*
Fling, Russell T., 4,614,935, Cl. 340-347.0DD.
Kumbatovic, Robert A., 4,614,897, Cl. 315-224.000.
Polansky, Carl; and Hawrylo, Frank Z., 4,614,292, Cl. 228-1.100.
Schiff, Leonard N., 4,615,026, Cl. 364-724.000.
Weaver, Charles A., 4,614,294, Cl. 228-37.000.
Ream, Ronald L.; Moore, David M.; and Corriveau, Christine L., to Wm. Wrigley Jr. Company. Taffy-like chewing gum confection and method. 4,614,654, Cl. 426-5.000.
Reed, Elmer E.; and Manoly, Arthur E., to Hughes Aircraft Company. High-power coaxial cable. 4,614,926, Cl. 333-244.000.
Regan, James F.: *See—*
Carr, Kenneth L.; Regan, James F.; Bousquet, Gerald G.; and Bielawa, Robert J., 4,614,514, Cl. 604-113.000.
Rehband Anatomiska AB: *See—*
Karlsson, Thomas, 4,614,181, Cl. 128-80.00C.
Rehfeld, Marc, to Saint-Gobain Vitrage. Multiple window glass having thermal and acoustical insulating properties. 4,614,676, Cl. 428-34.000.
Rehkopf, Charles H.: *See—*
Josephs, Mark A.; Milikovsky, Roman; Penird, Carl W.; and Rehkopf, Charles H., 4,614,896, Cl. 313-481.000.
Reibel, Charles: *See—*
Lehneis, Hans R.; and Reibel, Charles, 4,614,518, Cl. 623-39.000.
Reilly, John T.; Hobson, Roy B.; and Abdey, Gordon J., to Lever Brothers Company. Liquid detergent composition. 4,614,612, Cl. 252-541.000.
Reimann, Jorg, to Kernforschungszentrum Karlsruhe G.m.b.H. Degasifier. 4,614,527, Cl. 55-170.000.
Reinert, Friedrich: *See—*
Fikentscher, Rolf; Schneider, Siegfried; Klahr, Erhard; Reinert, Friedrich; Eckert, Gunter; and Stuebinger, Adolf, 4,614,613, Cl. 548-964.000.
Reinhall, Rolf; and Johansson, Johan I., to Sunds Defibrator AB. Rotor/mixer for controlling mixing and refining of pulp material. 4,614,304, Cl. 241-28.000.
Reiss, Gerhard, to Bayer Aktiengesellschaft. Pressure swing process for the adsorptive separation of gaseous mixtures. 4,614,525, Cl. 55-25.000.
Relyea, Robert G.: *See—*
Mehra, Ravinder C.; Relyea, Robert G.; and Baird, Peter K., 4,614,585, Cl. 210-433.200.
Repolles, Jose M.: *See—*
Matas, Ricardo D.; Codina Puigmarti, Jose M.; Repolles, Jose M.; and Sera, Jorge S., 4,614,833, Cl. 546-314.000.
Retajczyk, Theodore F., Jr.: *See—*
Feldman, Martin; Heimann, Peter A.; Johnson, William A.; Retajczyk, Theodore F., Jr.; and White, Donald L., 4,614,433, Cl. 356-401.000.
Reynolds, Claude L., Jr.: *See—*
Holbrook, Walter R.; Reynolds, Claude L., Jr.; Shimer, Julie A.; and Temkin, Henryk, 4,615,032, Cl. 372-45.000.
Rich, Donald S., to Thomas & Betts Corporation. Electrical assembly and method for arranging a plurality of electrical conductors in a pattern. 4,614,028, Cl. 29-749.000.

Richard Wolf GmbH: *See—*
Boebel, Manfred, 4,614,182, Cl. 128-130.000.
Richter Gedeon Vegyeszeti Gyar R.T.: *See—*
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.
Richter, Roland; Muller, Hanns P.; Kubitza, Werner; Engbert, Theodor; and Mennicken, Gerhard, to Bayer Aktiengesellschaft. Process for the production of oligomeric polyisocyanates and their use in the production of polyurethane plastics. 4,614,785, Cl. 528-45.000.
Ricke, James. Clamp for attaching a sink bowl to a counter top. 4,613,995, Cl. 4-634.000.
Ricoh Company, Ltd.: *See—*
Hakkaku, Kunio; Matsushita, Yoh; Tokumasu, Takahiko; and Yamamoto, Toshio, 4,614,949, Cl. 346-76.0PH.
Sakano, Yukio, 4,615,018, Cl. 364-900.000.
Suzaki, Masayuki; Nishiwaki, Shoji; and Hayashima, Toshitaka, 4,614,448, Cl. 400-208.000.
Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, 4,614,682, Cl. 428-213.000.
Umehara, Masaakira, 4,614,705, Cl. 430-286.000.
Riebel, Hans-Jochem; Eue, Ludwig; Faust, Wilfried; and Priesnitz, Uwe, to Bayer Aktiengesellschaft. N-acyl-piperidone ketal compounds and their use as antidotes for protecting crop plants from herbicidal damage. 4,614,537, Cl. 71-94.000.
Rieder, Matthias: *See—*
Steinbach, Hans-Horst; and Rieder, Matthias, 4,614,633, Cl. 264-338.000.
Riedhammer, Thomas M.: *See—*
Ogunbiyi, Lai; Riedhammer, Thomas M.; and Smith, Francis X., 4,614,549, Cl. 134-19.000.
Riegler, Gerold, to Boge Kompressoren Otto Boge GmbH & Co. KG. Rotary screw compressor with specific tooth profile. 4,614,484, Cl. 418-201.000.
Riihinen, Jaakko, to Valmet OY. Method for eddy current heating a roll in a paper machine. 4,614,565, Cl. 162-206.000.
Riley, Charles R.: *See—*
Riley, Priscilla C.; and Riley, Charles R., 4,614,049, Cl. 38-102.910.
Riley, Priscilla C.; and Riley, Charles R. Smocking frame. 4,614,049, Cl. 38-102.910.
Rilly, Gerard, to Deutsche Thomson Brandt GmbH. DC-AC converter for a load with an inductive component. 4,614,998, Cl. 363-16.000.
Rinderle, Heinz, to Telefunken Electronic GmbH. Circuit for transforming direct-current signals. 4,614,916, Cl. 330-289.000.
Rine, James C.: *See—*
Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., 4,614,310, Cl. 241-259.200.
Rinerson, Darrell D.; and Chuang, Patrick T., to Advanced Micro Devices, Inc. Nonvolatile dynamic ram circuit. 4,615,020, Cl. 365-184.000.
Ring, Frank R., Jr.: *See—*
Bibby, Kenneth; and Ring, Frank R., Jr., 4,614,022, Cl. 29-596.000.
Rinnai Corporation: *See—*
Komura, Masahiko, 4,614,993, Cl. 361-257.000.
Riquart, Christian; and Sauvee, Jean-Paul, to Societe Anonyme D.B.A. Brake-pressure corrector sensitive to deceleration. 4,614,381, Cl. 303-24.00A.
Rives, Allen K. Bore hole enlarging arrangement and method. 4,614,242, Cl. 175-269.000.
Roark, David N., to Ethyl Corporation. Demulsification of oil-in-water emulsions. 4,614,593, Cl. 210-708.000.
Robert Bosch GmbH: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, 4,614,887, Cl. 310-166.000.
Mattes, Bernhard; Mausner, Eberhard; and Suchowerskyj, Wadym, 4,614,876, Cl. 307-10.0SB.
Roberts, Thomas G.: *See—*
Honeycutt, Thomas E.; and Roberts, Thomas G., 4,614,913, Cl. 330-4.300.
Roberts, Victor D.: *See—*
Itani, Abdallah M.; and Roberts, Victor D., 4,614,898, Cl. 315-224.000.
Robinson, Kay: *See—*
Bate, Cecil A.; and Robinson, Kay, 4,614,554, Cl. 156-62.200.
Rocador Sociedad Anonima: *See—*
Taya, Miguel M.; and Sala, Rene R., 4,614,748, Cl. 514-613.000.
Rockwell International Corporation: *See—*
Maxham, Kenneth Y., 4,614,906, Cl. 323-267.000.
Rocwell: *See—*
Goldberg, Ira B., 4,614,721, Cl. 436-147.000.
Rodgers, J. Linn. Hose end nozzle with substance injector. 4,614,302, Cl. 239-315.000.
Rodgers, Jack L. Protective coating composition comprising a blend of polyvinyl acetate, hydraulic cement, EVA, and limestone. 4,614,755, Cl. 524-5.000.
Rodriguez, Francis: *See—*
Labbe , Roland; and Rodriguez, Francis, 4,614,459, Cl. 405-170.000.
Roemer, Peter B.: *See—*
Hickey, John S.; and Roemer, Peter B., 4,614,930, Cl. 335-302.000.
Rohm GmbH: *See—*
Arndt, Peter J.; Wenzel, Franz; Muller, Manfred; and Schlosser, Fritz, 4,614,827, Cl. 556-131.000.
Rohm and Haas Company: *See—*
Smolanoff, Joel R.; Fitzpatrick, J. Michael; and Ollinger, Janet, 4,614,734, Cl. 514-101.000.
Rohrback, Gilson H.; and Silverman, Herbert P., to Rohrback Technology Corporation. Filter cell for electrochemically measuring enzyme concentrations. 4,614,716, Cl. 435-39.000.
Rohrback Technology Corporation: *See—*
Rohrback, Gilson H.; and Silverman, Herbert P., 4,614,716, Cl. 435-39.000.
Rolf, Meinhard: *See—*
Neeff, Rutger, deceased; Rolf, Meinhard; and Muller, Walter, 4,614,547, Cl. 106-288.00Q.
Rolfe, Jonathan L.: *See—*
Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., 4,614,787, Cl. 528-75.000.
Rosen, Meyer R.; and Marlin, Lawrence, to Union Carbide Corporation. Process for agglomerating mineral ore concentrate utilizing emulsions of polymer binders or dry polymer binders. 4,614,539, Cl. 75-3.000.
Rosenbush, David M.; and Couch, Robert P., to United Technologies Corporation. Pulse record data capture for electrostatic engine diagnostics. 4,615,008, Cl. 364-431.020.
Ross, Cyrus A.; and Thurow, Eberhard, to Les Explosifs Nordex Ltee/Nordex Explosives Ltd. Mix-delivery system for explosives. 4,614,146, Cl. 86-20.00C.
Roussel Uclaf: *See—*
Delevallee, Francoise; Deraedt, Roger; and Jouquey, Simone, 4,614,736, Cl. 514-179.000.
Roveda, Riccardo; Di Gregorio, Carlo; De Gasperis, Paolo; and Miccoli, Giuseppe, to Selenia Industrie Elettroniche Associate SpA; and I.E.S.S. C.N.R. Method of suppressing magnetostatic waves in magnetic garnet films for microwave circuit applications. 4,614,923, Cl. 333-147.000.
Ruaro S.p.A.: *See—*
Cappellina, Giuseppe, 4,614,214, Cl. 141-288.000.
Ruehle, Paul H.: *See—*
Elliott, Richard L.; and Ruehle, Paul H., 4,614,798, Cl. 544-53.000.
Rule, Arthur W. T., to John Wyeth & Brother Ltd. Fat compositions. 4,614,663, Cl. 426-601.000.
Ruoslahti, Erkki; and Pierschbacher, Michael, to La Jolla Cancer Research Foundation. Tetrapeptide. 4,614,517, Cl. 623-11.000.
Ruppel, Danny R.: *See—*
Hines, John R.; Monroe, Raymond J.; and Ruppel, Danny R., 4,614,444, Cl. 384-138.000.
Ruppert, Ronald M.; and Savio, Lenore E., to GAF Corporation. Soil release agent for textiles. 4,614,519, Cl. 8-137.000.
Rusenko, James J.: *See—*
Theisen, Peter J.; Rusenko, James J.; and Navratil, Frank, Jr., 4,614,851, Cl. 200-146.00R.
Russell, Homer C.: *See—*
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.
Russell, Walter C., Jr. Compression-producing tool. 4,614,034, Cl. 30-120.300.
Russo, Onofrio N., to Gas Energy, Inc. Lockable valve. 4,614,203, Cl. 137-385.000.
Rusz, Vazul: *See—*
Fekete, Andras; Seres, Laszlo ; Foldesi, Istvan; and Rusz, Vazul, 4,614,305, Cl. 241-36.000.
Rutan, Elbert L. Aircraft wing flap. 4,614,320, Cl. 244-216.000.
Ruyten, Henricus M., to U.S. Philips Corporation. Magnetic-tape-cassette apparatus comprising at least one capstan. 4,614,289, Cl. 226-181.000.
Ryan, Philip J.; and Desai, Pravin, to Frito-Lay, Inc. Apparatus and method for distribution of seasonings and like granular/powdered materials. 4,614,162, Cl. 118-19.000.
Ryan, Thomas W. Vehicle heater repair apparatus and method. 4,614,226, Cl. 165-76.000.
Ryoke, Katsumi; Masuyama, Kenichi; and Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Magnetic recording medium having improved running properties. 4,614,685, Cl. 428-323.000.
Rzeszewski, Theodore S.: *See—*
Maney, George A.; and Rzeszewski, Theodore S., 4,614,971, Cl. 358-147.000.
S. A. Martin: *See—*
Capdeboscq, Bernard, 4,614,512, Cl. 493-441.000.
S.D.S. Biotech K.K.: *See—*
Ishikawa, Nobuo; Takaoka, Akio; Isono, Takashi; Motoyoshi, Masatoshi; and Kojima, Kazuhiro, 4,614,742, Cl. 514-237.000.
Saab-Scania Aktiebolag: *See—*
Elfverson, Sven E., 4,614,151, Cl. 98-2.000.
Skog, Lars H., 4,614,129, Cl. 74-477.000.
Sackmann, Gunter; Beck, Ulrich; and Baumgen, Heinz, to Bayer Aktiengesellschaft. Surface sizing agents for paper. 4,614,759, Cl. 524-549.000.
Sadaki, Hiroshi: *See—*
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, 4,614,819, Cl. 540-222.000.
Sagara, Iwao; Nakagawa, Koichi; and Hotta, Shintaro, to Oki Electric Industry Co., Ltd. Music card system. 4,614,144, Cl. 84-1.280.
Saikawa, Isamu: *See—*
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, 4,614,819, Cl. 540-222.000.
Saint-Gobain Vitrage: *See—*
Rehfeld, Marc, 4,614,676, Cl. 428-34.000.
St. Peter Creamery: *See—*
Englin, Robert A., 4,614,213, Cl. 141-59.000.

Saito, Etsuro, to Sony Corporation. Disc cassette with shutter and releasable latch therefor. 4,614,990, Cl. 360-133.000.
Saito, Ichiro: *See*—
Osato, Yoichi; Saito, Ichiro; and Takasu, Yoshio, 4,614,951, Cl. 346-135.100.
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, to Nihon Tokushu Noyaku Seizo, K.K. Certain pyridyloxy-phenoxy-propionate derivatives, herbicidal compositions containing same and their herbicidal method of use. 4,614,536, Cl. 71-94.000.
Saito, Kimiharu; and Akizuki, Osamu, to Iwatsu Electric Co., Ltd. Postacceleration cathode ray tube with an electron lens system for deflection amplification. 4,614,895, Cl. 313-429.000.
Saito, Shinichi: *See*—
Inoue, Hiromichi; Saito, Shinichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, 4,614,609, Cl. 252-299.660.
Saito, Yoshiaki: *See*—
Nishimatsu, Masaharu; Ide, Toshiaki; Saito, Yoshiaki; and Kubota, Yuichi, 4,614,687, Cl. 428-329.000.
Sakaguchi, Katsuyoshi; and Koga, Yukihiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Unloader for a tire curing machine. 4,614,485, Cl. 425-38.000.
Sakai, Yutaka, to Fuji Photo Optical Co., Ltd. Finder optical system. 4,614,409, Cl. 350-410.000.
Sakamoto, Fumio: *See*—
Takagi, Masayoshi; Hayashi, Takehiko; and Sakamoto, Fumio, 4,614,467, Cl. 409-199.000.
Sakamoto, Shiro: *See*—
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Sakanaka, Takao: *See*—
Takagi, Michimasa; Kajiwara, Toshiyuki; and Sakanaka, Takao, 4,614,103, Cl. 72-242.000.
Sakano, Yukio, to Ricoh Company, Ltd. Method for writing data into a memory. 4,615,018, Cl. 364-900.000.
Sakata, Tetsushin, to Nissan Motor Co., Ltd. Splined propellor shaft in which the splined sections assume a consistent radial relation when rotated. 4,614,506, Cl. 464-162.000.
Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, to Mitsubishi Denki Kabushiki Kaisha. Heat exchanger. 4,614,230, Cl. 165-151.000.
Sala, Rene R.: *See*—
Taya, Miguel M.; and Sala, Rene R., 4,614,748, Cl. 514-613.000.
Saligny, Yves, to Carpano & Pons. Electrical connection devices. 4,614,396, Cl. 339-97.00P.
Salkin, Herve : *See*—
Fradin, Louis; Plaquin, Bernard; and Salkin, Herve , 4,614,120, Cl. 73-761.000.
Sammon, James P. Coupling mechanism. 4,614,457, Cl. 403-322.000.
Sams, Carl R.; and Stivers, William G. Building blocks. 4,614,071, Cl. 52-309.120.
Samsioe, Per-Edward: *See*—
Petersson, Bo A. O.; Hansson, Leif T.; and Samsioe, Per-Edward, 4,614,905, Cl. 320-18.000.
Sanders Associates, Inc.: *See*—
Bauman, Ralph E.; and Seymour, Horace W., III, 4,614,922, Cl. 333-161.000.
Sanders, James D.: *See*—
Lannert, James W.; Sanders, James D.; Fowler, David K.; and Love, Jerry G., 4,614,374, Cl. 292-337.000.
Sands, Robert E.: *See*—
Daghe, Joseph L.; and Sands, Robert E., 4,614,113, Cl. 73-201.000.
Sandstrom, Rolf I. Edging, preferably a skirting-board. 4,614,838, Cl. 174-70.00C.
Saner, Remo: *See*—
Overath, Friedhelm; and Saner, Remo, 4,614,369, Cl. 285-55.000.
Sano, Shoichi; Furukawa, Yoshimi; and Tashiro, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Steering apparatus for a vehicle having steerable front and rear wheels. 4,614,351, Cl. 280-91.000.
Sanofi: *See*—
Jansen, Franz; and Gros, Pierre, 4,614,650, Cl. 424-85.000.
Santal Euipamentos S.A. Comercio E Industria: *See*—
Mello Ribeiro Pinto, Luis A. C., 4,614,476, Cl. 414-729.000.
Santel, Hans-Joachim: *See*—
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, 4,614,533, Cl. 71-92.000.
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,614,532, Cl. 71-92.000.
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lurssen, Klaus, 4,614,534, Cl. 71-92.000.
Sanyo Electric Co., Ltd.: *See*—
Kaite, Osamu, 4,614,975, Cl. 358-227.000.
Kurome, Shosaku; Akai, Tokio; and Maeda, Takahiro, 4,614,153, Cl. 99-511.000.
Sanyo Electric Co., Ltd: *See*—
Ito, Tukasa; and Miyazaki, Noriyuki, 4,614,696, Cl. 429-222.000.
Sanyo Kasei Kogyo Kabushiki Kaisha: *See*—
Masuda, Hitoshi; Takada, Koichi; and Nakata, Yoshiro, 4,614,586, Cl. 210-500.280.
Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder. Low temperature catalysts for methanol production. 4,614,749, Cl. 518-700.000.
Sardella, Louis M., to Wm. C. Staley Machinery Corporation. Intermittently protruding feeder for paperboard blanks. 4,614,335, Cl. 271-112.000.
Sarvanne, Hannu, to Oy E. Sarlin AB. Pump impeller. 4,614,478, Cl. 416-19.000.
Sasaki, Masao; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,614,709, Cl. 430-546.000.
Sasao, Isao, to Mitsubishi Denki Kabushiki Kaisha. Call signal conversion apparatus for elevator system. 4,614,931, Cl. 340-19.00R.
Sasao, Yasuo, to Alps Electric Co., Ltd. Multi-direction operation device. 4,614,847, Cl. 200-6.00A.
Sato, Hideo: *See*—
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.
Sato, Minoru, to Kabushiki Kaisha Toshiba. Ultrasonic imaging apparatus using scale control. 4,614,196, Cl. 128-660.000.
Sato, Tetsuo, to Hitachi, Ltd. Optical signal processing system with variable gain stage of servo system controlled by output of environmental condition sensor. 4,614,863, Cl. 250-201.000.
Satoh, Fumihiko: *See*—
Mikami, Kazuo; Satoh, Fumihiko; and Shimura, Mikihiko, 4,614,958, Cl. 357-19.000.
Satoh, Paul S.: *See*—
Baldwin, Thomas O.; Holzman, Thomas F.; Satoh, Paul S.; and Yein, Frederick S., 4,614,712, Cl. 435-4.000.
Sauvee, Jean-Paul: *See*—
Riquart, Christian; and Sauvee, Jean-Paul, 4,614,381, Cl. 303-24.00A.
Savage, Steven J., to United States of America, Air Force. Method for continuously casting thin sheet. 4,614,220, Cl. 164-461.000.
Savard, Guy; and Lee, Robert, to Canadian Liquid Air Ltd. Method of and apparatus for casting metal using carbon dioxide to form gas shield. 4,614,216, Cl. 164-67.100.
Savio, Lenore E.: *See*—
Ruppert, Ronald M.; and Savio, Lenore E., 4,614,519, Cl. 8-137.000.
Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, to Shikoku Chemicals Corporation. Isocyanuric acid adduct of 2-vinyl-4,6-diamino-S-triazine, process for synthesis of said adduct and process for hardening polyepoxy resin with said adduct. 4,614,774, Cl. 525-504.000.
Sawada, Satoru; and Yabuki, Yoshiharu, to Fuji Photo Film Co., Ltd. Heat-developable color photographic material with mercapto antifoggant. 4,614,702, Cl. 430-203.000.
Sayanagi, Kazuo, to Canon Kabushiki Kaisha. Method and apparatus for reproducing a color image using additive and subtractive primary colors. 4,614,967, Cl. 358-75.000.
Sayano, Akio: *See*—
Ikeda, Kazuo; Sayano, Akio; and Tanaka, Shun-ichiro, 4,614,689, Cl. 428-409.000.
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, to Bayer Aktiengesellschaft. Herbicidal 5-amino-1-phenylpyrazoles. 4,614,533, Cl. 71-92.000.
Schallner, Otto: *See*—
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lurssen, Klaus, 4,614,534, Cl. 71-92.000.
Schanwald, Stephen M. Batting practice baseball and method. 4,614,339, Cl. 273-26.00R.
Scharf, Udo: *See*—
Kachholz, Traudel; Scharf, Udo; and Schlingmann, Merten, 4,614,717, Cl. 435-69.000.
Scharting, Gunter: *See*—
Dreschmann, Peter; Walter, Wilhelm; Scharting, Gunter; and Neugebauer, Steffen, 4,614,446, Cl. 384-484.000.
Scheel, Hans: *See*—
Fritz, Manfred; Scheel, Hans; and Wangerin, Gerhard, 4,614,142, Cl. 83-496.000.
Scheevel, Mark R.: *See*—
Logsdon, Gary L.; and Scheevel, Mark R., 4,615,003, Cl. 364-200.000.
Schering Aktiengesellschaft: *See*—
Petzoldt, Karl; Wiechert, Rudolf; Laurent, Henry; Nickisch, Klaus; and Bittler, Dieter, 4,614,616, Cl. 540-4.000.
Schering Corporation: *See*—
Chipkin, Richard E.; and Witkowski, Joseph T., 4,614,743, Cl. 514-258.000.
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,614,738, Cl. 514-194.000.
Schierstedt, Detlef: *See*—
Dell, Hans-Dieter; Pelster, Bernhard; Kraus, Reinhold; and Schierstedt, Detlef, 4,614,741, Cl. 514-222.000.
Schiff, Leonard N., to RCA Corporation. Digital FIR filters with enhanced tap weight resolution. 4,615,026, Cl. 364-724.000.
Schilling, Curtis L., Jr., to Union Carbide Corporation. Novel process for promoting hydrosilation reactions using a second hydrosilane. 4,614,812, Cl. 556-406.000.
Schilling, Peter; and Braddon, David V., to Westvaco Corporation. Corrosion inhibitors. 4,614,600, Cl. 252-8.553.
Schimmel, Karl F.; Prucnal, Paul J.; Camp, Douglas R.; and Tiedt, John W., to PPG Industries, Inc. Compositions containing resins having air-oxidizable groups and epoxy groups and epoxy-reactive silicon-containing compounds having hydrolyzable groups. 4,614,766, Cl. 525-104.000.

Schipfer, Rudolf: *See—*
Daimer, Wolfgang; Gmoser, Johann; and Schipfer, Rudolf, 4,614,783, Cl. 525-504.000.

Schlegel, Donald E.: *See—*
Buckley, Norman A.; Butt, Roland E.; and Schlegel, Donald E., 4,614,177, Cl. 126-299.00R.

Schlingmann, Merten: *See—*
Kachholz, Traudel; Scharf, Udo; and Schlingmann, Merten, 4,614,717, Cl. 435-69.000.

Schlosser, Fritz: *See—*
Arndt, Peter J.; Wenzel, Franz; Muller, Manfred; and Schlosser, Fritz, 4,614,827, Cl. 556-131.000.

Schlumberger Technology Corp.: *See—*
Panetta, Pascal; and Tromelin, Jacques, 4,614,250, Cl. 181-102.000.

Schmedemann, Walter, to U.S. Philips Corporation. Displaceable X-ray examination table. 4,615,042, Cl. 378-209.000.

Schmidt, Dieter; and Steffen, Hans, to Hoffmann-La Roche Inc. Porphyrin derivatives as fluorescent markers for immunoassays. 4,614,723, Cl. 436-536.000.

Schmidt, Reinhard: *See—*
Zettler, Karl-Heinz; Bruning, Paul; Schmidt, Reinhard; and Hemfort, Heinrich, 4,614,598, Cl. 210-781.000.

Schmidt, Robert R.: *See—*
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, 4,614,533, Cl. 71-92.000.
Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, 4,614,532, Cl. 71-92.000.
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lurssen, Klaus, 4,614,534, Cl. 71-92.000.

Schmierer, Roland; Handte, Reinhard; Liebl, Rainer; Mildenberger, Hilmar; Bauer, Klaus; Bieringer, Hermann; and Burstell, Helmut, to Hoechst Aktiengesellschaft. Herbicidal imidazolinones. 4,614,535, Cl. 71-92.000.

Schneider, Siegfried: *See—*
Fikentscher, Rolf; Schneider, Siegfried; Klahr, Erhard; Reinert, Friedrich; Eckert, Gunter; and Stuebinger, Adolf, 4,614,613, Cl. 548-964.000.

Schneider, Theodor; and Schubert, Karl-Friedrich, to ITT Industries, Inc. Electric drive unit especially for windshield wipers of a motor vehicle. 4,614,886, Cl. 310-83.000.

Schneider, Thomas P.; and Trentel, Susan E., to Those Characters from Cleveland. Transformable toy figure. 4,614,505, Cl. 446-372.000.

Schonenberger, Rolf, to Woodway AG. Movable surface apparatus, particularly for physical exercise and training. 4,614,337, Cl. 272-69.000.

Schottner, Lajos: *See—*
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, 4,614,540, Cl. 75-59.130.

Schreiner, Siegfried: *See—*
Appl, Max; Molin, Gerhard D.; Goesele, Wilhelm; Schreiner, Siegfried; and Treiber, Gert, 4,614,647, Cl. 423-515.000.

Schroeder, Donald E., Jr.; Plummer, Mark A.; and Zimmerman, Carle C., Jr., to Marathon Oil Company. Sulfonation of crude oils with gaseous SO_3 to produce petroleum sulfonates. 4,614,623, Cl. 260-505.00R.

Schroer. Wolf-Dieter; Beck, Ulrich; Mummenhoff, Peter; and Baumgen, Heinz, to Bayer Aktiengesellschaft. Sizes based on ketene dimers. 4,614,546, Cl. 106-213.000.

Schubert, Heinz: *See—*
Muldery, Hendrikus; van der Struys, Frank V.; and Schubert, Heinz, 4,614,325, Cl. 249-120.000.

Schubert, Karl-Friedrich: *See—*
Schneider, Theodor; and Schubert, Karl-Friedrich, 4,614,886, Cl. 310-83.000.

Schulte-Elektrotechnik GmbH & Co., Firma: *See—*
Schulte, Siegfried; and Boing, Manfred, 4,614,848, Cl. 200-61.850.

Schulte-Schlagbaum Aktiengesellschaft: *See—*
Fisermann, Armin, 4,614,862, Cl. 235-382.500.

Schulte, Siegfried; and Boing, Manfred, to Schulte-Elektrotechnik GmbH & Co., Firma. Switch arrangement with closing lock. 4,614,848, Cl. 200-61.850.

Schulze, Richard G.: *See—*
Khan, M. Asif; Schulze, Richard G.; and Skogman, Richard A., 4,614,961, Cl. 357-30.000.

Schurmann, Jurgen: *See—*
Doster, Wolfgang; Kresser, Anton; and Schurmann, Jurgen, 4,614,978, Cl. 358-263.000.

Schustek, Siegfried: *See—*
Ahner, Peter; Harer, Helmut; and Schustek, Siegfried, 4,614,887, Cl. 310-166.000.

Schwabe, Peter; and Voigt, Reiner, to Bayer Aktiengesellschaft. Use of paraffin waxes or microwaxes for silicone pastes, and the packaging and use thereof. 4,614,758, Cl. 524-487.000.

Schwamborn, Michael; Kuhle, Engelbert; Klauke, Erich; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Hanssler, Gerd, to Bayer Aktiengesellschaft. 2,4-diamino-6-halogeno-5-alkylthiopyrimidines. 4,614,532, Cl. 71-92.000.

Schwan, Herbert A., to Teleplex Corporation. Telemetry system for distributed equipment controls and equipment monitors. 4,614,944, Cl. 340-825.060.

Schwetz, Karl A.: *See—*
Knoch, Heinrich; Schwetz, Karl A.; Lipp, Alfred; and Bechler, Eckhart, 4,614,724, Cl. 501-87.000.

Scolnick, Edward M.: *See—*
Hughes, Joseph V.; Scolnick, Edward M.; and Tomassini, Joanne E., 4,614,793, Cl. 530-350.000.

Scott, M. Walter: *See—*
Arch, David K.; Scott, M. Walter; Smith, Darryl L.; and Weisberg, Leonard R., 4,614,957, Cl. 357-16.000.

Sea Dupar S.R.L.: *See—*
Campitelli, Antonio, 4,614,582, Cl. 210-242.300.

Seaber, Geoffrey B.: *See—*
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,614,299, Cl. 239-6.000.

Seagate Technology: *See—*
Kaczeus, Steven; and Ngo, Long V., 4,614,989, Cl. 360-106.000.

Sechet, Claude: *See—*
Motsch, Roger; and Sechet, Claude, 4,614,972, Cl. 358-147.000.

Seeck, Peter: *See—*
Rath, Dieter; and Seeck, Peter, 4,614,590, Cl. 210-637.000.

Seiler, Herbert: *See—*
Deitz, Rolf; and Seiler, Herbert, 4,614,818, Cl. 534-598.000.

Seino, Hajime; Uchibori, Tsuyoshi; Inamasu, Sachiko; and Nishitani, Toshiyuki, to Dai-Ichio Kogyo Seiyaku Co., Ltd. Synthesis of sugar or sugar-alcohol fatty acid esters. 4,614,718, Cl. 435-72.000.

Sekimoto, Yukihiko; Yanagida, Makoto; and Kanda, Shoichi, to Nitto Chemical Industry Co., Ltd. Completion and workover fluids. 4,614,601, Cl. 252-8.551.

Sekisui Fine Chemical Co., Ltd.: *See—*
Mori, Hirofumi; and Hori, Hitoshi, 4,614,701, Cl. 430-175.000.

Selenia Industrie Elettroniche Associate SpA: *See—*
Roveda, Riccardo; Di Gregorio, Carlo; De Gasperis, Paolo; and Miccoli, Giuseppe, 4,614,923, Cl. 333-147.000.

Selep, M. Victoria: *See—*
Bishop, William B.; Oftelie, David C.; and Selep, M. Victoria, 4,614,531, Cl. 65-158.000.

Senet, Jean-Pierre G.: *See—*
Malfroot, Thierry A.; and Senet, Jean-Pierre G., 4,614,829, Cl. 558-283.000.

Sengoku, Norio: *See—*
Shirasawa, Hisato; Sengoku, Norio; and Ohki, Nobuaki, 4,614,559, Cl. 156-182.000.

Senturia, Stephen D.: *See—*
Zavracky, Paul M.; Senturia, Stephen D.; and Morrison, Richard H., Jr., 4,614,119, Cl. 73-704.000.

Sera, Jorge S.: *See—*
Matas, Ricardo D.; Codina Puigmarti, Jose M.; Repolles, Jose M.; and Sera, Jorge S., 4,614,833, Cl. 546-314.000.

Seres, Laszlo : *See—*
Fekete, Andras; Seres, Laszlo ; Foldesi, Istvan; and Rusz, Vazul, 4,614,305, Cl. 241-36.000.

Seshimo, Yu: *See—*
Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, 4,614,230, Cl. 165-151.000.

Sestak, Joseph T.: *See—*
Nagare, Arthur T.; Mueller, Wolfgang; Fendya, Thomas J.; and Sestak, Joseph T., 4,614,015, Cl. 29-239.000.

Setterberg, Lars I. Method of vibrating bulk material in moulds. 4,614,436, Cl. 366-114.000.

Seymour, Horace W., III: *See—*
Bauman, Ralph E.; and Seymour, Horace W., III, 4,614,922, Cl. 333-161.000.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
Bertotti, Franco; Ferrari, Paolo; Foroni, Mario; and Garue, Sergio, 4,614,962, Cl. 357-38.000.

Shaffer, John W.; and Sindlinger, Ronald E., to GTE Products Corporation. Primer insulating base. 4,614,494, Cl. 431-362.000.

Shannon, Paul J., to Armstrong World Industries, Inc. Liquid crystalline materials useful to prepare polymeric films. 4,614,619, Cl. 260-397.200.

Sharp Kabushiki Kaisha: *See—*
Fukuda, Hiroaki; Sumiyoshi, Kenji; Masaki, Ryoichi; and Tani, Zempei, 4,614,874, Cl. 250-560.000.
Nakagawa, Kiyotoshi, 4,614,959, Cl. 357-23.800.
Nishiyama, Haruo, 4,614,421, Cl. 355-14.0CU.
Yoshiura, Shoichiro, 4,614,423, Cl. 355-55.000.

Sheehan, Judith: *See—*
Sheehan, Judith M.; and Engelman, Peter J., 4,614,360, Cl. 281-45.000.

Sheehan, Judith M.; and Engelman, Peter J., to Sheehan, Judith. Patient medication record system. 4,614,360, Cl. 281-45.000.

Sheldon, Peter; and Hayes, Russell E., to United States of America, Energy. Process for selectively patterning epitaxial film growth on a semiconductor substrate. 4,614,564, Cl. 156-657.000.

Shell Oil Company: *See—*
Bekooij, Jurrianus; Kooijmans, Petrus G.; Raudenbusch, Werner T.; and Stachowiak, Stephen A., 4,614,775, Cl. 525-533.000.
Stewart, Thomas L.; and Demny, Florian C., 4,614,594, Cl. 210-746.000.

Shelton, Robert N.; and Mowrer, Gail S., to Foster Grant Corporation. Commodity display device. 4,614,272, Cl. 211-163.000.

Sheng, Yung-Bool D.; and Widicus, Warren A., to Quaker Oats Company, The. Dipeptide sweetened ready-to-eat cereal and coating method. 4,614,657, Cl. 426-96.000.

Shibamoto, Takeshi: *See*—
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.
Shibuya Kogyo Co., Ltd.: *See*—
Kawabe, Seikichi, 4,614,078, Cl. 53-551.000.
Shigeta, Kunio: *See*—
Yamamoto, Yoko; Shigeta, Kunio; and Takahashi, Jiro, 4,614,700, Cl. 430-122.000.
Shikoku Chemicals Corporation: *See*—
Sawa, Natsuo; Masuda, Takeshi; and Mizui, Takashi, 4,614,774, Cl. 525-504.000.
Shimamura, Akira: *See*—
Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, 4,614,996, Cl. 362-147.000.
Shimanari, Tatsumi: *See*—
Endo, Akinori; Shimanari, Tatsumi; and Watanabe, Shunji, 4,614,424, Cl. 355-56.000.
Shimano Industrial Company Limited: *See*—
Ban, Masuo, 4,614,314, Cl. 242-84.20G.
Shimer, Julie A.: *See*—
Holbrook, Walter R.; Reynolds, Claude L., Jr.; Shimer, Julie A.; and Temkin, Henryk, 4,615,032, Cl. 372-45.000.
Shimizu Construction Co., Ltd.: *See*—
Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, 4,614,996, Cl. 362-147.000.
Shimizu, Shigehisa; Suzuki, Chiaki; Harada, Kazumasa; and Maeda, Tomohisa, to Fuji Photo Film Co., Ltd. Film loading method and apparatus. 4,614,019, Cl. 29-450.000.
Shimizu, Shigeru, to Hamada Printing Press Mfg. Co., Ltd. Mechanism for adjusting the vertical position of a format on a printer. 4,614,155, Cl. 101-248.000.
Shimonabe, Hideyuki: *See*—
Fujii, Hiroshi; and Shimonabe, Hideyuki, 4,615,000, Cl. 363-41.000.
Shimonou, Shigeru: *See*—
Inada, Hiroshi; Nomura, Tadashi; and Shimonou, Shigeru, 4,615,023, Cl. 369-32.000.
Shimura, Mikihiko: *See*—
Mikami, Kazuo; Satoh, Fumihiko; and Shimura, Mikihiko, 4,614,958, Cl. 357-19.000.
Shiokawa, Kozo: *See*—
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,614,536, Cl. 71-94.000.
Shionogi & Co., Ltd.: *See*—
Nagata, Wataru; Aoki, Tsutomu; and Nishitani, Yasuhiro, 4,614,797, Cl. 540-226.000.
Shipchandler, Mohammed T.: *See*—
Kirkemo, Curtis L.; and Shipchandler, Mohammed T., 4,614,823, Cl. 544-300.000.
Shirasawa, Hisato; Sengoku, Norio; and Ohki, Nobuaki, to Hitachi, Ltd. Method of fabricating multilayer printed-circuit board. 4,614,559, Cl. 156-182.000.
Shomoda, Hideyoshi: *See*—
Watanabe, Noboru; Shomoda, Hideyoshi; and Kubo, Yoichiro, 4,614,779, Cl. 525-199.000.
Shook, Frankie S.: *See*—
Finlay, David E.; Norgren, Kent S.; and Shook, Frankie S., 4,615,017, Cl. 364-900.000.
Shortt, Alexandra B., to Stauffer Chemical Company. S-propargyl trithiophosphonate insecticides for use in soil. 4,614,735, Cl. 514-135.000.
Showa Highpolymer Co., Ltd.: *See*—
Takiyama, Eiichiro; and Morita, Katsuhisa, 4,614,761, Cl. 525-59.000.
Siegel, Karl-Heinz, to Minigrip, Inc. Pilfer proof hangup bag structure and method. 4,615,045, Cl. 383-5.000.
Sieloff, Gloria M.: *See*—
Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, 4,614,790, Cl. 528-191.000.
Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, 4,614,791, Cl. 528-193.000.
Siemens Aktiengesellschaft: *See*—
Fetzer, Jurgen, 4,614,994, Cl. 361-303.000.
Knesewitsch, Jakob; and Pointner, Manfred, 4,614,877, Cl. 307-64.000.
Kuhl, Wilfried; and Gemmel, Edwin, 4,614,850, Cl. 200-144.00B.
Mund, Konrad; Luft, Gunter; and Gebhardt, Ulrich, 4,614,577, Cl. 204-415.000.
Sigerist, Helmut, to Venturetech Enterprises, Inc. Overlay molding press. 4,614,488, Cl. 425-233.000.
Sigg, Hans: *See*—
Fivaz, Robert; Pfisterer, Dieter; and Sigg, Hans, 4,614,038, Cl. 33-149.00J.
Signorelli, John A. Internal locking mechanism for barrel type locks. 4,614,097, Cl. 70-34.000.
Silverman, Herbert P.: *See*—
Rohrback, Gilson H.; and Silverman, Herbert P., 4,614,716, Cl. 435-39.000.
Simelunas, William J.; Aquino, Agostino; and Polifroni, Nicholas, to Nabisco Brands, Inc. Peanut press feed mechanism. 4,614,154, Cl. 100-116.000.
Simmonds Precision: *See*—
Wright, James R.; and Huggins, Ronald B., 4,614,398, Cl. 339-143.00R.
Simon, Francois. Lifting pulley block. 4,614,331, Cl. 254-390.000.
Simon, Franz: *See*—
Kamitz, Herbert; and Simon, Franz, 4,614,924, Cl. 333-167.000.
Sindlinger, Ronald E.: *See*—
Shaffer, John W.; and Sindlinger, Ronald E., 4,614,494, Cl. 431-362.000.
Singer Company, The: *See*—
Jarvis, Kevin M., 4,614,941, Cl. 340-747.000.
Stavis, Gus, 4,614,317, Cl. 244-3.190.
Yan, Johnson K.; Szabo, Nicholas S.; and Chen, Lish-Yann, 4,615,013, Cl. 364-521.000.
Singer, Mark I.: *See*—
Blom, Eric D.; and Singer, Mark I., 4,614,516, Cl. 623-9.000.
Sisk, Hollis D., to Century Electric, Inc. Field coil for dynamoelectric machine. 4,614,023, Cl. 29-598.000.
Sitler, Rickie L.: *See*—
Fry, William F.; and Sitler, Rickie L., 4,614,556, Cl. 156-78.000.
Fry, William F.; and Sitler, Rickie L., 4,614,680, Cl. 428-158.000.
Skarelius, Jerker, to Wirsbo Bruks Aktiebolag. Gaseous diffusion resistant tube. 4,614,208, Cl. 138-103.000.
Skipper, John B., to Dunlop Limited a British Company. Flexible joints or bearings. 4,614,455, Cl. 403-133.000.
Skoda, Jerald T. Individually fitted game call. 4,614,503, Cl. 446-213.000.
Skog, Lars H., to Saab-Scania Aktiebolag. Arrangement for mounting gear shift means in a gearbox. 4,614,129, Cl. 74-477.000.
Skogman, Richard A.: *See*—
Khan, M. Asif; Schulze, Richard G.; and Skogman, Richard A., 4,614,961, Cl. 357-30.000.
Slama, Francis J.: *See*—
Valcho, Joseph J.; Slama, Francis J.; Strukl, Joseph S.; and Park, Chang-Man, 4,614,602, Cl. 252-33.300.
Slegeir, William A.: *See*—
Sapienza, Richard S.; Slegeir, William A.; O'Hare, Thomas E.; and Mahajan, Devinder, 4,614,749, Cl. 518-700.000.
Sletmo, Lasse, to Instrumentverken AB. Navigation instrument. 4,614,112, Cl. 73-178.00R.
Sloman, Anthony W., to Cambridge Instruments Limited. Charged particle deflection. 4,614,872, Cl. 250-396.00R.
Slowik, Sylvester H.: *See*—
Breen, Thomas J.; and Slowik, Sylvester H., 4,614,362, Cl. 282-9.00R.
Smith, Albert C.; and Owen, Dennis W., to Champion International Corporation; and Williamette Valley Co. Apparatus and process for making plywood using control means and patching material. 4,614,555, Cl. 156-64.000.
Smith, Darryl L.: *See*—
Arch, David K.; Scott, M. Walter; Smith, Darryl L.; and Weisberg, Leonard R., 4,614,957, Cl. 357-16.000.
Smith, Francis X.: *See*—
Ogunbiyi, Lai; Riedhammer, Thomas M.; and Smith, Francis X., 4,614,549, Cl. 134-19.000.
Smith, Gordon C. R.: *See*—
Nicholas, Donald C.; and Smith, Gordon C. R., 4,614,011, Cl. 26-73.000.
Smith, Louis W.; and Csapo, John S., to GTE Communications Systems Corp. Secretarial telephone station with distributed processing for use with a secretarial answering system. 4,614,842, Cl. 179-27.0FH.
Smith & Loveless: *See*—
Weis, Frank G., 4,614,589, Cl. 210-608.000.
Smith, Michael W.: *See*—
Chlebina, Lawrence E.; Portalupi, Steven J.; and Smith, Michael W., 4,614,268, Cl. 206-304.000.
Smith, Robbie E.: *See*—
Harris, Ronald P.; Holland, Lawrence R.; and Smith, Robbie E., 4,614,428, Cl. 356-246.000.
Smolanoff, Joel R.; Fitzpatrick, J. Michael; and Ollinger, Janet, to Rohm and Haas Company. Pesticidal phosphoroamido(di)thioates. 4,614,734, Cl. 514-101.000.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Fritz, Manfred; Scheel, Hans; and Wangerin, Gerhard, 4,614,142, Cl. 83-406.000.
Snapper, Inc.: *See*—
Radway, Ronald F., 4,614,343, Cl. 273-186.00A.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., to E. R. Squibb & Sons, Inc. 7-oxabicycloheptane and 7-oxabicycloheptene compounds. 4,614,825, Cl. 548-252.000.
Snyder, Howard E., to United States of America, Air Force. Damaged radar radome repair device. 4,614,466, Cl. 409-179.000.
Soares, Adelino H. F., to Voith S.A. Maquinas E Equipamentos. Gravity gasifier for reducing free tars and improving efficiency. 4,614,523, Cl. 48-76.000.
Sobotta, Reinhard; and Isermann, Heinrich, to Meteor-Siegen Apparatebau Paul Schmeck GmbH. Controller for trimming copy sheets from a material web in a copying machine. 4,614,422, Cl. 355-29.000.
Societe Anonyme D.B.A.: *See*—
Mery, Jean C.; Thioux, Alain; and Meynier, Guy, 4,614,254, Cl. 188-71.500.
Riquart, Christian; and Sauvee, Jean-Paul, 4,614,381, Cl. 303-24.00A.
Societe Anonyme de Plieuses Automatiques: *See*—
Torres, Jean, 4,614,288, Cl. 226-165.000.
Societe de Dietrich & Cie: *See*—
Hamert, Jean-Marie, 4,614,443, Cl. 374-163.000.

Societe d'Etudes et de Recherches de l'Ecole Nationale Superieure d'Arts et Metiers Seram: *See*—
Pelletier, Jean L.; Moreau, Michel; and Bocquet, Michel, 4,614,115, Cl. 73-599.000.
Societe Financiere & Immobiliere SKF et Cie: *See*—
Daugny, Daniel, 4,614,631, Cl. 264-258.000.
Societe Kativois: *See*—
Kativois, Michel, 4,614,860, Cl. 219-492.000.
Societe Nationale des Poudres et Explosifs: *See*—
Malfroot, Thierry A.; and Senet, Jean-Pierre G., 4,614,829, Cl. 558-283.000.
Societe Nationale d'Etude et de Construction de Meteurs d'Aviation S.N.E.C.M.A.: *See*—
Leonard, Alain R.; and Leray, Jannick J. M. L., 4,614,550, Cl. 148-11.50N.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See*—
Lesgourgues, Jacques, 4,614,296, Cl. 228-194.000.
Somers, Robert I., to Black & Decker, Inc. Accessory storage device for electric jigsaw. 4,614,037, Cl. 30-392.000.
Sommerfeld, Wolfgang: *See*—
Hetzer, Nobert; and Sommerfeld, Wolfgang, 4,614,163, Cl. 118-268.000.
Sony Corporation: *See*—
Murakami, Atsushi, 4,614,991, Cl. 360-137.000.
Ninomiya, Takeshi; and Suzuki, Hideto, 4,614,980, Cl. 358-335.000.
Saito, Etsuro, 4,614,990, Cl. 360-133.000.
Sudo, Yoshihiro, 4,614,474, Cl. 414-281.000.
Sood, Lal C.; Golab, James S.; and DeJesus, Armando L., to Motorola, Inc. Address transition pulse circuit. 4,614,883, Cl. 307-449.000.
Sorber, Robert, to Keane Monroe Corporation. Automatic operating system and method for swinging doors. 4,614,057, Cl. 49-29.000.
Sorenson, Greg A., to Tektronix, Inc. Method and apparatus for generating timing pulses. 4,614,973, Cl. 358-153.000.
South African Inventions Development Corporation: *See*—
Fourie, Gideon; and Muir, David E., 4,614,277, Cl. 217-43.00A.
Southwest Research Institute: *See*—
Jaeckle, Thomas H., 4,614,940, Cl. 340-636.000.
Southwest Techni-Systems, Inc.: *See*—
Coke, Harry E.; and Gill, Gary W., 4,614,686, Cl. 428-327.000.
Spahni, Milton D.: *See*—
Farrington, Theodore E., Jr.; Spahni, Milton D.; and Rattray, Thomas, 4,614,679, Cl. 428-138.000.
Spector, George: *See*—
Brill, Fred; and Spector, George, 4,614,008, Cl. 24-501.000.
Greene, Laverne; and Spector, George, 4,614,404, Cl. 350-280.000.
Spectra-Physics, Inc.: *See*—
von Gunten, Marc K.; Cook, Benjamin H.; and Gerstenberger, David C., 4,615,034, Cl. 372-99.000.
Spellacy, William N.: *See*—
Tsibris, John C. M.; and Spellacy, William N., 4,614,715, Cl. 435-28.000.
Sperr, Karl, to Swiss Aluminium Ltd. Metal frame assembly for windows or doors. 4,614,062, Cl. 49-504.000.
Sperry Corporation: *See*—
Lindenfelser, Timothy M., 4,614,666, Cl. 427-39.000.
Spielau, Paul: *See*—
Kuhnel, Werner; and Spielau, Paul, 4,614,753, Cl. 521-85.000.
Spietschka, Ernst; and Urban, Manfred, to Hoechst Aktiengesellschaft. Process for the preparation of dry alkali metal salts of 1,8-naphthalimide. 4,614,803, Cl. 546-98.000.
Sprague, Peter W.: *See*—
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,614,825, Cl. 548-252.000.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Organoleptic uses of para-methylacetophenone dimethylacetal. 4,614,611, Cl. 252-522.00R.
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., to International Flavors & Fragrances Inc. Process for preparing alkyl substituted para-carboalkoxy cyclohexanones. 4,614,831, Cl. 560-126.000.
SRS Water Research Corporation AB: *See*—
Jorgensen, Sven E., 4,614,591, Cl. 210-669.000.
Stachowiak, Stephen A.: *See*—
Bekooij, Jurrianus; Kooijmans, Petrus G.; Raudenbusch, Werner T.; and Stachowiak, Stephen A., 4,614,775, Cl. 525-533.000.
Staeubli Ltd.: *See*—
Mettler, Franz, 4,614,211, Cl. 139-76.000.
Stagner, Irvin D. Multi-interchangeable tow bar. 4,614,354, Cl. 280-415.00R.
Stahlherm, Dieter; Haack, Reimer; Stewen, Wilhelm; and Lukaszewicz, Helmut, to Carl Still GmbH & Co. KG, Firma. Method and apparatus for selective after-quenching of coke on a coke bench. 4,614,567, Cl. 201-1.000.
Staley, Leo D.: *See*—
White, Donnie R.; Hobgood, David F.; Swim, Larry E.; and Staley, Leo D., 4,614,661, Cl. 426-511.000.
Stamicarbon B.V.: *See*—
Bongers, Jozef J. M.; and van Geenen, Albert A., 4,614,792, Cl. 528-318.000.
Stanco, Alexei; and Piper, James A. Photoradiation method and arrangement. 4,614,190, Cl. 128-395.000.
Standard Oil Company, The: *See*—
Attig, Thomas G.; Graham, Anne M.; and Pesa, Frederick, 4,614,750, Cl. 518-713.000.
Puri, Rajen, 4,614,234, Cl. 166-261.000.
Standard Register Company, The: *See*—
Maierson, Theodore, 4,614,757, Cl. 524-333.000.
Standard Telephones and Cables Public Limited Company: *See*—
Darton, Kenneth S.; and Larsen, Johnathan P., 4,614,041, Cl. 33-313.000.
Stanley Works, The: *See*—
Crover, Stephen E., 4,614,241, Cl. 173-139.000.
Staplin, Theodore R., Jr.: *See*—
Bradley, John J.; Stoffers, Brian L.; Staplin, Theodore R., Jr.; and Widen, Melinda A., 4,615,016, Cl. 364-756.000.
Star-Kist Foods, Inc.: *See*—
Juravic, Davor, 4,614,489, Cl. 425-376.00R.
Starr, Lionel: *See*—
Mulhollan, James S.; and Starr, Lionel, 4,614,187, Cl. 128-303.00R.
State of Israel, Atomic Energy Commission, Nuclear Research Center Negev, The: *See*—
Kafri, Oded; and Livnat, Aminadav, 4,614,039, Cl. 33-241.000.
Stauffer Chemical Company: *See*—
Crawford, Janet E.; Epstein, Ronald A.; and Triplett, Kelly B., 4,614,729, Cl. 502-401.000.
Doane, Elliott P., 4,614,643, Cl. 423-140.000.
Kraatz, Gary W.; Chavdarian, Charles G.; and Heusinkveld, Valerie F., 4,614,828, Cl. 558-203.000.
Shortt, Alexandra B., 4,614,735, Cl. 514-135.000.
Telschow, Jeffrey E., 4,614,814, Cl. 560-61.000.
Stavis, Gus, to Singer Company, The. Sensor for anti-tank projectile. 4,614,317, Cl. 244-3.190.
Steele, Dennis L.: *See*—
Dettloff, Marvin L.; Steele, Dennis L.; and Whiteside, Ross C., Jr., 4,614,788, Cl. 528-91.000.
Steele, Maribel: *See*—
Steele, Richard J.; and Steele, Maribel, 4,613,993, Cl. 2-411.000.
Steele, Richard J.; and Steele, Maribel. Protective head gear with tubular rings. 4,613,993, Cl. 2-411.000.
Steffen, Hans: *See*—
Schmidt, Dieter; and Steffen, Hans, 4,614,723, Cl. 436-536.000.
Steiff, Leon H.: *See*—
Albert, William G.; Astell, Gerald G.; Favale, Anthony G.; and Steiff, Leon H., 4,614,389, Cl. 339-45.00M.
Steinbach, Hans-Horst; and Rieder, Matthias, to Bayer Aktiengesellschaft. Release agent for polyurethane molding compositions. 4,614,633, Cl. 264-338.000.
Steiner, Alois, to Sulzer-Ruti Machinery Works Limited. Weaving rotor for multiple longitudinal traversing shed weaving machines. 4,614,209, Cl. 139-11.000.
Steiner, Walter: *See*—
Fudalla, Manfred; and Steiner, Walter, 4,614,285, Cl. 222-454.000.
Steinhagen, Thomas C., to Gates Rubber Company, The. Thread protector. 4,614,207, Cl. 138-96.00T.
Steinke, Kurt E.: *See*—
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,614,040, Cl. 33-312.000.
Sterling Drug Inc.: *See*—
Gorman, William G.; Popp, Karl F.; and Mavica, Kenneth M., 4,614,649, Cl. 424-54.000.
Philion, Richard E., 4,614,830, Cl. 560-109.000.
Sterman, Albert P.; Wakeman, Thomas G.; and Williams, Jesse J., to General Electric Company. Combustion chamber construction. 4,614,082, Cl. 60-39.320.
Stetter, Jorg; Gehring, Reinhold; Lindig, Markus; Schallner, Otto; Eue, Ludwig; Schmidt, Robert R.; Santel, Hans-Joachim; and Lurssen, Klaus, to Bayer Aktiengesellschaft. 5-amino-4-heterocyclyl-1-phenylpyrazoles. 4,614,534, Cl. 71-92.000.
Stetter, Jorg: *See*—
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, 4,614,533, Cl. 71-92.000.
Stevens, Frederick G., to Hydra Systems International, Inc. Protective shutter with cleaning aperture for portable laserbeam aiming device. 4,614,050, Cl. 42-1.010.
Stevenson, David. Method of forming a reinforced structural building panel. 4,614,013, Cl. 29-155.00R.
Stewart, Thomas L.; and Demny, Florian C., to Shell Oil Company. BS and W measurement system. 4,614,594, Cl. 210-746.000.
Stewen, Wilhelm: *See*—
Stahlherm, Dieter; Haack, Reimer; Stewen, Wilhelm; and Lukaszewicz, Helmut, 4,614,567, Cl. 201-1.000.
Stivers, William G.: *See*—
Sams, Carl R.; and Stivers, William G., 4,614,071, Cl. 52-309.120.
Stoffers, Brian L.: *See*—
Bradley, John J.; Stoffers, Brian L.; Staplin, Theodore R., Jr.; and Widen, Melinda A., 4,615,016, Cl. 364-756.000.
Stouffs, Robert H. M.: *See*—
Cameron, Lawrence E.; and Stouffs, Robert H. M., 4,614,548, Cl. 127-40.000.
Stover, William A.: *See*—
Chester, Arthur W.; Cormier, William E., Jr.; and Stover, William A., 4,614,578, Cl. 208-120.000.
Strait, Ross W., Jr., to Times Fiber Communications, Inc. Optical fiber connector. 4,614,401, Cl. 350-96.210.
Straw, David A., to Ball Corporation. Apparatus for supporting a body for reciprocal movement. 4,614,104, Cl. 72-347.000.
Strickland, Gordon E., Jr., to Chevron Research Company. Non-compliant pressure cell. 4,614,118, Cl. 73-701.000.
Strickland, James K.; and Ivey, H. Grady, to Strickland Systems, Inc. Concrete mold core assembly. 4,614,326, Cl. 249-180.000.

Strickland Systems, Inc.: *See—*
Strickland, James K.; and Ivey, H. Grady, 4,614,326, Cl. 249-180.000.

Strukl, Joseph S.: *See—*
Valcho, Joseph J.; Slama, Francis J.; Strukl, Joseph S.; and Park, Chang-Man, 4,614,602, Cl. 252-33.300.

Stuart, Frank A.; and Tyson, William H., Jr., to Claypro U.S.A. Recovery of oil and sulfonate from filter cake. 4,614,597, Cl. 210-772.000.

Stuebinger, Adolf: *See—*
Fikentscher, Rolf; Schneider, Siegfried; Klahr, Erhard; Reinert, Friedrich; Eckert, Gunter; and Stuebinger, Adolf, 4,614,613, Cl. 548-964.000.

Su, Tien-Kuei: *See—*
Colombo, Edward A.; Kwack, Tae H.; and Su, Tien-Kuei, 4,614,764, Cl. 525-72.000.

Suchowerskyj, Wadym: *See—*
Mattes, Bernhard; Mausner, Eberhard; and Suchowerskyj, Wadym, 4,614,876, Cl. 307-10.0SB.

Sudo, Yoshihiro, to Sony Corporation. Device for exchanging disks. 4,614,474, Cl. 414-281.000.

Sugatsune Kogyo Co., Ltd.: *See—*
Ishii, Hiroyuki, 4,614,273, Cl. 211-183.000.

Sugimoto, Tadao; and Hayakawa, Toshiaki, to Fuji Photo Film Co., Ltd. Silver halide emulsion. 4,614,711, Cl. 430-567.000.

Sugio, Akitoshi; Okabe, Masao; and Amagai, Akikazu, to Mitsubishi Gas Chemical Company, Inc. Novel polyphenylene ether resin composition. 4,614,773, Cl. 525-391.000.

Sugiura, Saburo; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, to Daido Tokushuko Kabushiki Kaisha. Powdered coal burner. 4,614,159, Cl. 110-261.000.

Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, to Victor Company of Japan, Ltd. Digital video signal reproducing apparatus. 4,614,979, Cl. 358-335.000.

Sugiyama, Takekatsu; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Heat sensitive recording paper. 4,614,955, Cl. 346-200.000.

Sukenari, Akira; Hasegawa, Isao; and Ito, Yukio, to Clarion Co., Ltd. Mode selection device of a tape deck. 4,614,987, Cl. 360-93.000.

Sukkar, Mary H. Step gradient photochromic glass body and process. 4,614,530, Cl. 65-30.110.

Sullivan, John W., to Airstream, Inc. Composite multi-axle suspension for vehicles. 4,614,247, Cl. 180-24.020.

Sulzer, John: *See—*
Jeffrey, Paul W.; Sulzer, John; and Ashley, Peter J., 4,614,224, Cl. 164-476.000.

Sulzer-Ruti Machinery Works Limited: *See—*
Steiner, Alois, 4,614,209, Cl. 139-11.000.

Sumitomo Electric: *See—*
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.

Sumitomo Electric Industries, Ltd.: *See—*
Kuroishi, Nobuhito; Osada, Mitsuo; and Hara, Akio, 4,614,638, Cl. 419-39.000.

Sumitomo Metal Mining Company Limited: *See—*
Kimura, Takayoshi; and Tsuyuguchi, Seiichi, 4,614,542, Cl. 75-76.000.

Sumiyoshi, Kenji: *See—*
Fukuda, Hiroaki; Sumiyoshi, Kenji; Masaki, Ryoichi; and Tani, Zempei, 4,614,874, Cl. 250-560.000.

Sunahara, Shuichi: *See—*
Kato, Yoshito; Sunahara, Shuichi; and Kurebayashi, Susumu, 4,614,164, Cl. 118-323.000.

Sunburst Energy Systems, Inc.: *See—*
Morrison, Roderick G., 4,614,870, Cl. 250-358.100.

Sunds Defibrator AB: *See—*
Reinhall, Rolf; and Johansson, Johan I., 4,614,304, Cl. 241-28.000.

Sundstrand Corporation: *See—*
Heiser, Richard K., 4,614,992, Cl. 361-160.000.
Mosher, Philip C.; and Aleem, Mohd A., 4,614,888, Cl. 310-261.000.
Sutrina, Thomas, 4,614,964, Cl. 357-76.000.

Sunstrand Data Control, Inc.: *See—*
Hulsing, Rand H., II; Peters, Rex B.; and Steinke, Kurt E., 4,614,040, Cl. 33-312.000.

Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co.: *See—*
Westermeyer, Joseph, 4,614,928, Cl. 335-201.000.

Sutrina, Thomas, to Sundstrand Corporation. Coaxial semiconductor package. 4,614,964, Cl. 357-76.000.

Suzaki, Masayuki; Nishiwaki, Shoji; and Hayashima, Toshitaka, to Ricoh Company, Ltd. Ribbon cassette cam means to selectively separate ink ribbon feed and pinch rollers. 4,614,448, Cl. 400-208.000.

Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, to Ricoh Company, Ltd. Thermosensitive image transfer recording medium. 4,614,682, Cl. 428-213.000.

Suzuki, Chiaki: *See—*
Shimizu, Shigehisa; Suzuki, Chiaki; Harada, Kazumasa; and Maeda, Tomohisa, 4,614,019, Cl. 29-450.000.

Suzuki, Hideto: *See—*
Ninomiya, Takeshi; and Suzuki, Hideto, 4,614,980, Cl. 358-335.000.

Suzuki, Nobuo: *See—*
Kitatani, Katsugi; Murata, Masataka; Yokoya, Hiroaki; and Suzuki, Nobuo, 4,614,699, Cl. 430-115.000.

Suzuki, Toyotosi; and Nagata, Toru, to Canon Kabushiki Kaisha. Operation control device for camera. 4,614,416, Cl. 354-400.000.

Swedo, Raymond J.: *See—*
Zupancic, Joseph J.; and Swedo, Raymond J., 4,614,769, Cl. 525-327.100.
Zupancic, Joseph J.; and Swedo, Raymond J., 4,614,770, Cl. 525-327.100.

Sweny, Michael R.: *See—*
Laing, Donald R.; Sweny, Michael R.; and Giard, John P., 4,614,016, Cl. 29-412.000.

Swim, Larry E.: *See—*
White, Donnie R.; Hobgood, David F.; Swim, Larry E.; and Staley, Leo D., 4,614,661, Cl. 426-511.000.

Swiss Aluminium Ltd.: *See—*
Sperr, Karl, 4,614,062, Cl. 49-504.000.

Sybron Corporation: *See—*
Mehra, Ravinder C.; Relyea, Robert G.; and Baird, Peter K., 4,614,585, Cl. 210-433.200.

Syntex (U.S.A.) Inc.: *See—*
Vaccaro, Robert K., 4,614,498, Cl. 433-126.000.

System Development Corp.: *See—*
Lennen, James W., 4,614,528, Cl. 55-387.000.

Szabo, Nicholas S.: *See—*
Yan, Johnson K.; Szabo, Nicholas S.; and Chen, Lish-Yann, 4,615,013, Cl. 364-521.000.

Szabo, Rozalia: *See—*
Rajkai, Gabor; Szabo, Rozalia; Dohar, Istvan; Vinkovits, Sandor; Hetei, Marta; and Florian, Gyorgy, 4,615,027, Cl. 364-726.000.

Szabo, Stephan L. Hair-cutting apparatus and razor. 4,614,032, Cl. 30-31.000.

Sziklavari, Janos: *See—*
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, 4,614,540, Cl. 75-59.130.

Szporny, Laszlo : *See—*
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.

Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., to Thermedics, Inc. Drug dispensing wound dressing. 4,614,787, Cl. 528-75.000.

Tabuchi, Seigo, to Kabushiki Kaisha Itoh Seitetsusho. Apparatus for soaking steel pieces. 4,614,495, Cl. 432-164.000.

Tadiran Ltd.: *See—*
Zelitzki, Michael; and Josefsberg, Yekutiel, 4,614,917, Cl. 331-1.00A.

Tadokoro, Eiichi: *See—*
Ryoke, Katsumi; Masuyama, Kenichi; and Tadokoro, Eiichi, 4,614,685, Cl. 428-323.000.

Taitel, Charles M. Passive-type treadmill. 4,614,336, Cl. 272-69.000.

Takada, Koichi: *See—*
Masuda, Hitoshi; Takada, Koichi; and Nakata, Yoshiro, 4,614,586, Cl. 210-500.280.

Takada, Shun; Kadowaki, Takashi; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,614,710, Cl. 430-549.000.

Takagi, Masayoshi; Hayashi, Takehiko; and Sakamoto, Fumio, to Toyoda Koki Kabushiki Kaisha. Cam milling machine. 4,614,467, Cl. 409-199.000.

Takagi, Michimasa; Kajiwara, Toshiyuki; and Sakanaka, Takao, to Hitachi, Ltd. Rolling mill. 4,614,103, Cl. 72-242.000.

Takahashi, Jiro: *See—*
Yamamoto, Yoko; Shigeta, Kunio; and Takahashi, Jiro, 4,614,700, Cl. 430-122.000.

Takahashi, Nobuaki: *See—*
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.

Takai, Masao: *See—*
Ikenaga, Katsuzi; Takai, Masao; Nakashima, Nobuyuki; and Umemoto, Koji, 4,614,410, Cl. 350-507.000.

Takanashi, Akihiro: *See—*
Kuniyoshi, Shinji; Terasawa, Tsuneo; Kurosaki, Toshiei; Kawamura, Yoshio; Hosaka, Sumio; and Takanashi, Akihiro, 4,614,432, Cl. 356-401.000.

Takanashi, Itsuo; Nakagaki, Shintaro; and Kuriyama, Takashi, to Victor Company of Japan, Limited. Color camera with stripe filter using two controllable bias lights for improving color reproducibility in dark scenes and reducing afterimages. 4,614,965, Cl. 358-44.000.

Takano, Akira; Mizuno, Yutaka; Ishikawa, Hiroyuki; and Honjo, Yoshiaki, to Casio Computer Co., Ltd. Electronic cash register. 4,614,384, Cl. 312-281.000.

Takaoka, Akio: *See—*
Ishikawa, Nobuo; Takaoka, Akio; Isono, Takashi; Motoyoshi, Masatoshi; and Kojima, Kazuhiro, 4,614,742, Cl. 514-237.000.

Takashima, Yoshiyuki, to Davis, Doyle; and Nanao Corporation. Electronic game machine suitable for chance and gambling card games. 4,614,342, Cl. 273-85.0CP.

Takasu, Yoshio: *See—*
Osato, Yoichi; Saito, Ichiro; and Takasu, Yoshio, 4,614,951, Cl. 346-135.100.

Takatsu, Norihiko: *See—*
Kawahara, Atsushi; Ota, Tadashi; Kuroiwa, Toshihisa; Isogai, Masaki; Takatsu, Norihiko; and Kawamura, Koichiro, 4,614,977, Cl. 358-260.000.

Takayanagi, Takashi: *See—*
Tamagawa, Shigehisa; and Takayanagi, Takashi, 4,614,688, Cl. 428-331.000.

Takeda Chemical Industries, Ltd.: *See*—
Hori, Teruo; Nakabayashi, Masamitsu; and Furukawa, Yuzo, 4,614,781, Cl. 525-330.600.
Kihara, Kazuaki; and Kuroda, Makoto, 4,614,821, Cl. 544-145.000.

Takeda, Nobuyuki: *See*—
Katayama, Shigeru; Nakano, Takayuki; and Takeda, Nobuyuki, 4,614,826, Cl. 549-559.000.

Takemoto, Nagayasu: *See*—
Furukawa, Takashi; Endo, Michio; Takemoto, Nagayasu; and Watanabe, Kunio, 4,614,551, Cl. 148-12.00F.

Takeshi, Yasuhira: *See*—
Taniguchi, Yasuyuki; Yoshida, Kotaro; Takeshi, Yasuhira; Michishita, Teruo; Kawai, Michio; and Kawakami, Makoto, 4,614,461, Cl. 405-211.000.

Takeuchi, Hiroshi, to Kabushiki Kaisha Daikin Seisakusho. Damper disc assembly. 4,614,261, Cl. 192-106.200.

Takeya, Kazuo: *See*—
Teshima, Kiyomi; Kajitani, Yukimasa; Takeya, Kazuo; and Miyagawa, Takuya, 4,614,083, Cl. 60-39.530.

Takiyama, Eiichiro; and Morita, Katsuhisa, to Showa Highpolymer Co., Ltd. Process for producing curable resin. 4,614,761, Cl. 525-59.000.

Takuwa, Toshiaki: *See*—
Hori, Katsuyoshi; Kagawa, Takeshi; Kusano, Kazuki; and Takuwa, Toshiaki, 4,614,856, Cl. 219-130.210.

Tamagawa, Shigehisa; and Takayanagi, Takashi, to Fuji Photo Film Co., Ltd. Support for photographic paper. 4,614,688, Cl. 428-331.000.

Tamary, Ernest J., to Eastman Kodak Company. Pneumatic adhesive control system. 4,614,560, Cl. 156-357.000.

Tamukai, Tadao: *See*—
Arazu, Shuichi; Tamukai, Tadao; and Fujisawa, Kyuichi, 4,615,012, Cl. 364-520.000.

Tamura, Seiji; Ikeda, Toshimichi; and Hirata, Toichi, to Hitachi Construction Machinery Company, Inc. Hydraulic circuit system for civil engineering and architectural machinery. 4,614,475, Cl. 414-694.000.

Tanaka, Atsuo: *See*—
Inui, Tsuneo; Tanaka, Atsuo; Hanabusa, Tetsuhiro; and Kubota, Harunori, 4,614,691, Cl. 428-623.000.

Tanaka, Hiromichi: *See*—
Kobayashi, Masaharu; Noguchi, Takaharu; Nishimura, Keizo; Tanaka, Hiromichi; Nishida, Masami; and Arai, Takao, 4,614,934, Cl. 40-347.0DA.

Tanaka, Koji: *See*—
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.

Tanaka, Shigeru: *See*—
Onodera, Toshihiro; Tanaka, Shigeru; and Matsumoto, Sunao, 4,614,999, Cl. 363-28.000.

Tanaka, Shun-ichiro: *See*—
Ikeda, Kazuo; Sayano, Akio; and Tanaka, Shun-ichiro, 4,614,689, Cl. 428-409.000.

Tanaka, Yoshihiro: *See*—
Hata, Yoshiaki; Matsumoto, Toshiaki; Tominaga, Shinji; Yamamoto, Koji; Yamashita, Maki; and Tanaka, Yoshihiro, 4,614,417, Cl. 354-403.000.

Tangorra, Giorgio; Cicognani, Mario; and Macchiarulo, Vincenzo, to Industrie Pirelli S.p.A. Toothed belt. 4,614,509, Cl. 474-205.000.

Tani, Zempei: *See*—
Fukuda, Hiroaki; Sumiyoshi, Kenji; Masaki, Ryoichi; and Tani, Zempei, 4,614,874, Cl. 250-560.000.

Tanigawa, Yoshitaka; and Okino, Yoshinori, to Mazda Motor Corporation. Fuel control means for engine intake systems. 4,614,174, Cl. 123-478.000.

Taniguchi, Yasuyuki; Yoshida, Kotaro; Takeshi, Yasuhira; Michishita, Teruo; Kawai, Michio; and Kawakami, Makoto, to Nippon Steel Corporation. Tendon of TLP and electrical corrosion protecting method of the same. 4,614,461, Cl. 405-211.000.

Taniguti, Ryousuke, to Mitsubishi Denki Kabushiki Kaisha. Vibration monitoring apparatus. 4,614,117, Cl. 73-659.000.

Tanikawa, Shinji; and Nawa, Koichiro, to Yoshida Kogyo K. K. Prefabricated curtain wall assembly. 4,614,069, Cl. 52-235.000.

Tanimoto, Sadao: *See*—
Ueno, Toshihiko; and Tanimoto, Sadao, 4,614,287, Cl. 226-74.000.

Tanizawa, Junpei: *See*—
Yamashita, Kiichi; Tanizawa, Junpei; and Iwasaki, Takao, 4,614,324, Cl. 249-11.000.

Tarner, David E. Portable observation structure. 4,614,252, Cl. 182-116.000.

Tashiro, Yutaka: *See*—
Sano, Shoichi; Furukawa, Yoshimi; and Tashiro, Yutaka, 4,614,351, Cl. 280-91.000.

Tatani, Atsushi: *See*—
Yoneda, Kenichi; Miyake, Masato; Muramatsu, Kenzo; and Tatani, Atsushi, 4,614,645, Cl. 423-240.000.

Tatoprint Nederland B.V.: *See*—
Niemeijer, Halbe J., 4,614,373, Cl. 292-318.000.

Tatsumi, Susumu: *See*—
Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, 4,614,682, Cl. 428-213.000.

Taya, Miguel M.; and Sala, Rene R., to Rocador Sociedad Anonima. Topical use composition for the treatment of seborrhea affections of the human scalp. 4,614,748, Cl. 514-613.000.

TDK Corporation: *See*—
Nishimatsu, Masaharu; Ide, Toshiaki; Saito, Yoshiaki; and Kubota, Yuichi, 4,614,687, Cl. 428-329.000.

Techno Roll Co., Ltd.: *See*—
Kakihana, Kazumasa; and Nishiwaki, Hiroshi, 4,614,094, Cl. 66-170.000.

Teckserve Ltd.: *See*—
Faul, Thomas L., 4,614,282, Cl. 220-307.000.

Tegal Corporation: *See*—
Hegedus, Andreas G., 4,614,639, Cl. 422-186.050.

Tek-Matik, Inc.: *See*—
Bolle, Fred; Herronen, John R.; and Wright, Joseph M., 4,614,108, Cl. 72-446.000.

Tektronix, Inc.: *See*—
Sorenson, Greg A., 4,614,973, Cl. 358-153.000.

Teledyne, Inc.: *See*—
Coulter, Leland E., 4,614,099, Cl. 72-29.000.

Teledyne Industries, Inc.: *See*—
Fox, Richard C., 4,614,185, Cl. 123-668.000.
Manthis, Danny O., 4,614,694, Cl. 429-84.000.

Telefonaktiebolaget LM Ericsson: *See*—
Jarvfalt, Staffan, 4,614,909, Cl. 328-140.000.
Petersson, Bo A. O.; Hansson, Leif T.; and Samsioe, Per-Edward, 4,614,905, Cl. 320-18.000.

Telefunken Electronic GmbH: *See*—
Rinderle, Heinz, 4,614,916, Cl. 330-289.000.

Teleplex Corporation: *See*—
Schwan, Herbert A., 4,614,944, Cl. 340-825.060.

Telschow, Jeffrey E., to Stauffer Chemical Company. Monoalkylation of dihydroxy aromatic compounds. 4,614,814, Cl. 560-61.000.

Temkin, Henryk: *See*—
Holbrook, Walter R.; Reynolds, Claude L., Jr.; Shimer, Julie A.; and Temkin, Henryk, 4,615,032, Cl. 372-45.000.

Tennikat, Josef, to Lever Brothers Company. Two phase margarine. 4,614,656, Cl. 426-61.000.

Terada, Mitsuyoshi: *See*—
Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, 4,614,996, Cl. 362-147.000.

Teramachi, Hiroshi. Straight sliding roller bearing. 4,614,382, Cl. 384-45.000.

Terasawa, Tsuneo: *See*—
Kuniyoshi, Shinji; Terasawa, Tsuneo; Kurosaki, Toshiei; Kawamura, Yoshio; Hosaka, Sumio; and Takanashi, Akihiro, 4,614,432, Cl. 356-401.000.

Terashima, Kanetsugu: *See*—
Inoue, Hiromichi; Saito, Shinichi; Terashima, Kanetsugu; Inukai, Takashi; and Furukawa, Kenji, 4,614,609, Cl. 252-299.660.

Terhune, James H., to General Electric Company. Fission-couple neutron sensor. 4,614,635, Cl. 376-154.000.

Tesch, Hans-Jurgen, to CDM Connectors Development & Mftg. AG. Winding contact with rotary fastening for insertion into a contact housing hole with circular cross section. 4,614,400, Cl. 339-220.00R.

Teshima, Kiyomi; Kajitani, Yukimasa; Takeya, Kazuo; and Miyagawa, Takuya, to Agency of Industrial Science & Technology. Gas turbine. 4,614,083, Cl. 60-39.530.

Texaco Inc.: *See*—
Walker, Clarence O., 4,614,599, Cl. 252-8.512.

Texas A&M University System: *See*—
Baldwin, Thomas O.; Holzman, Thomas F.; Satoh, Paul S.; and Yein, Frederick S., 4,614,712, Cl. 435-4.000.

Texas Instruments Incorporated: *See*—
Carson, Kent R.; Luttmer, Joseph D.; Williams, Charles E.; McKee, William R.; Tso, Stephen T.; and Johnson, Elwin L., 4,614,835, Cl. 136-250.000.
Heston, David D.; and Lehmann, Randall E., 4,614,915, Cl. 330-277.000.
Hu, Kwok D.; and Bloemer, Robert W., 4,615,029, Cl. 370-89.000.

Tezuka, Nobuo, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus with arrangement for positioning resetting the head. 4,614,984, Cl. 360-75.000.

Th. Goldschmidt AG: *See*—
Huettinger, Rudolf; and Holtschmidt, Ulrich, 4,614,622, Cl. 260-410.700.

Thacker, George R. Firearm construction. 4,614,051, Cl. 42-12.000.

Theisen, Peter J.; Rusenko, James J.; and Navratil, Frank, Jr., to Eaton Corporation. Contact sequencing arrangement for rotary double break switch. 4,614,851, Cl. 200-146.00R.

Thermedics, Inc.: *See*—
Szycher, Michael; Dempsey, Donald J.; and Rolfe, Jonathan L., 4,614,787, Cl. 528-75.000.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Arrangement for excavating bulk material from a track bed. 4,614,238, Cl. 171-16.000.

Thioux, Alain: *See*—
Mery, Jean C.; Thioux, Alain; and Meynier, Guy, 4,614,254, Cl. 188-71.500.

Thomas & Betts Corporation: *See*—
Rich, Donald S., 4,614,028, Cl. 29-749.000.

Thomas Josef Heimbach GmbH, Co.: *See*—
Gerundt, Sebastian; Guse, Rolf; Halterbeck, Walter; Hollenberg, Gunter; Maier, Gerhard; and Muller, Karl-Heinz, 4,614,969, Cl. 358-101.000.

Thomson-CSF: *See*—
Le Barny, Pierre; Dubois, Jean C.; and Ravaux, Gilles, 4,614,608, Cl. 252-299.640.

Those Characters from Cleveland: *See—*
Schneider, Thomas P.; and Trentel, Susan E., 4,614,505, Cl. 446-372.000.

Thurow, Eberhard: *See—*
Ross, Cyrus A.; and Thurow, Eberhard, 4,614,146, Cl. 86-20.00C.

Tiedt, John W.: *See—*
Schimmel, Karl F.; Prucnal, Paul J.; Camp, Douglas R.; and Tiedt, John W., 4,614,766, Cl. 525-104.000.

Times Fiber Communications, Inc.: *See—*
Strait, Ross W., Jr., 4,614,401, Cl. 350-96.210.

Timmerman, Daniel M.; Priem, Jan J.; and Janssens, Wilhelmus, to AGFA-Gevaert, N.V. Method for the preparation of stable aqueous dispersions of polymer beads and the use of these dispersions in photographic elements. 4,614,708, Cl. 430-517.000.

Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; and Rine, James C., to Goodyear Tire & Rubber Company, The. Comminuting apparatus with fluid cylinder rotor and stator biasing. 4,614,310, Cl. 241-259.200.

Tocker, Stanley, to Du Pont de Nemours, E. I., and Company. N-methylol 4-amino-1,2,4-triazine-5-ones. 4,614,799, Cl. 544-182.000.

Tokai Electric Wire Company Limited: *See—*
Ito, Takeji; Kusumi, Saburo; Nishikawa, Kazuo; Fukuda, Michio; Okunishi, Toshifumi; Miwa, Sinkichi; and Ohta, Yosinobu, 4,614,135, Cl. 81-9.510.

Tokumasu, Takahiko: *See—*
Hakkaku, Kunio; Matsushita, Yoh; Tokumasu, Takahiko; and Yamamoto, Toshio, 4,614,949, Cl. 346-76.0PH.

Tokuse, Masahiro: *See—*
Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, 4,614,690, Cl. 428-614.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Nagano, Katsumi, 4,614,884, Cl. 307-475.000.
Nakano, Hirotaka; and Goto, Tatumi, 4,615,033, Cl. 372-99.000.
Umeji, Tadashi, 4,614,873, Cl. 250-551.000.

Tomassini, Joanne E.: *See—*
Hughes, Joseph V.; Scolnick, Edward M.; and Tomassini, Joanne E., 4,614,793, Cl. 530-350.000.

Tomidokoro, Kanji, to Komamura Photographic Co., Ltd. Dark slide locking system for film holder. 4,614,414, Cl. 354-284.000.

Tominaga, Shinji: *See—*
Hata, Yoshiaki; Matsumoto, Toshiaki; Tominaga, Shinji; Yamamoto, Koji; Yamashita, Maki; and Tanaka, Yoshihiro, 4,614,417, Cl. 354-403.000.

Tompkins, L. Kirk, to Global Manufacturing Co, Inc. Vertical vibrator. 4,614,123, Cl. 74-87.000.

Tong, Robert S. K., to Com Dev Ltd. Waveguide manifold coupled multiplexer with triple mode filters. 4,614,920, Cl 333-135.000.

Topp, Mark; and Hadden, Sam, to Cordis Corporation. Method of making an electroluminescent display device with islands of light emitting elements. 4,614,668, Cl. 427-66.000.

Toppan Printing Co., Ltd.: *See—*
Ida, Keizo; and Goto, Akihiko, 4,614,079, Cl. 53-563.000.

Torao, Katabira: *See—*
Mitsuharu, Sato; and Torao, Katabira, 4,614,470, Cl. 409-230.000.

Toray Silicone Co., Ltd.: *See—*
Ona, Isao; and Ozaki, Masaru, 4,614,675, Cl. 427-387.000.

Torres, Jean, to Societe Anonyme de Plieuses Automatiques. Apparatus for locking a mechanical device out of entrainment. 4,614,288, Cl. 226-165.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Mitsuharu, Sato; and Torao, Katabira, 4,614,470, Cl. 409-230.000.

Toth, Michael J.; and Ensell, Robert G., to ESSEF Industries, Inc. Side tap opening for a filament-wound tank. 4,614,279, Cl. 220-3.000.

Totti, Gino: *See—*
Lewis, Conrad; and Totti, Gino, 4,615,028, Cl. 370-58.000.

Townsend Engineering Company: *See—*
Townsend, Ray T., 4,614,005, Cl. 17-34.000.

Townsend, Ray T., to Townsend Engineering Company. Method and means for linking encased meat products. 4,614,005, Cl. 17-34.000.

Toyama Chemical Co., Ltd.: *See—*
Nagai, Takashi; Ochiai, Hirokazu; Inaba, Takihiro; Myokan, Isao; Sadaki, Hiroshi; and Saikawa, Isamu, 4,614,819, Cl. 540-222.000.

Toyama, Masamichi, to Canon Kabushiki Kaisha. Range finding system suited for video camera. 4,614,974, Cl. 358-227.000.

Toyo Kohan Co., Ltd.: *See—*
Inui, Tsuneo; Tanaka, Atsuo; Hanabusa, Tetsuhiro; and Kubota, Harunori, 4,614,691, Cl. 428-623.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Takagi, Masayoshi; Hayashi, Takehiko; and Sakamoto, Fumio, 4,614,467, Cl. 409-199.000.

Toyota Jidosha K.K.: *See—*
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,614,256, Cl. 192-4.00A.

Toyota Jidosha Kabushiki Kaisha: *See—*
Hoshino, Shigeru; and Miyata, Hiroshi, 4,614,869, Cl. 250-231.0SE.
Kato, Yoshito; Sunahara, Shuichi; and Kurebayashi, Susumu, 4,614,164, Cl. 118-323.000.

Toyotomi Kogyo Co., Ltd.: *See—*
Nakamura, Kazuharu; and Yoshino, Tooru, 4,614,493, Cl. 431-341.000.

Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, to Bayer Aktiengesellschaft. Moulding compounds of thermoplastic polyamide and graft rubber. 4,614,763, Cl. 525-66.000.

Trampe, Douglas R. Automatic window. 4,614,059, Cl. 49-118.000.

TransData, Inc.: *See—*
Battocletti, Frank E.; and Hammond, Scott H., 4,615,009, Cl. 364-483.000.

Treiber, Gert: *See—*
Appl, Max; Molin, Gerhard D.; Goesele, Wilhelm; Schreiner, Siegfried; and Treiber, Gert, 4,614,647, Cl. 423-515.000.

Trentel, Susan E.: *See—*
Schneider, Thomas P.; and Trentel, Susan E., 4,614,505, Cl. 446-372.000.

Tresser, David. Interest-bearing instrument kit. 4,614,365, Cl. 283-59.000.

Tri-Tool: *See—*
Pertle John E., 4,614,136, Cl. 82-44.000.

Trimmer, James E.: *See—*
Franco, Eduardo G.; and Trimmer, James E., 4,613,999, Cl. 5-400.000.

Trimon, Emiliano: *See—*
Kiczek, Edward F.; Beckner, Mervyn J.; and Trimon, Emiliano, 4,614,490, Cl. 431-4.000.

Triplett, Kelly B.: *See—*
Crawford, Janet E.; Epstein, Ronald A.; and Triplett, Kelly B., 4,614,729, Cl. 502-401.000.

Tripp, Edward S.; and Larkin, Mark E., to Abbott Laboratories. Drug delivery system. 4,614,515, Cl. 604-403.000.

Trivedi, Bharat K.: *See—*
Hamilton, Harriet W.; Patt, William C.; and Trivedi, Bharat K., 4,614,732, Cl. 514-46.000.

Tromelin, Jacques: *See—*
Panetta, Pascal; and Tromelin, Jacques, 4,614,250, Cl. 181-102.000.

Troponwerke GmbH & Co., KG: *See—*
Dell, Hans-Dieter; Pelster, Bernhard; Kraus, Reinhold; and Schierstedt, Detlef, 4,614,741, Cl. 514-222.000.

TRW Inc.: *See—*
Charlton, Keith D.; Bracnik, Anthony S.; and Forget, Kenneth M., 4,614,010, Cl. 24-639.000.

Tsibris, John C. M.; and Spellacy, William N., to University of Illinois, The Board of Trustees of the. Predictive test for impending ovulation in mammals. 4,614,715, Cl. 435-28.000.

Tso, Stephen T.: *See—*
Carson, Kent R.; Luttmer, Joseph D.; Williams, Charles E.; McKee, William R.; Tso, Stephen T.; and Johnson, Elwin L., 4,614,835, Cl. 136-250.000.

Tsuchiya, Shizuo: *See—*
Ohta, Morio; Tsuchiya, Shizuo; Nakano, Yoshito; Aikawa, Masaru; and Asaumi, Seiji, 4,614,954, Cl. 346-160.000.

Tsukuda, Takaaki; Hata, Toyohiko; and Fujisaki, Akira, to Nihon Radiator Co., Ltd. Method for manufacture of magnet. 4,614,929, Cl. 335-284.000.

Tsunero, Yusa: *See—*
Hisao, Shibuya; and Tsunero, Yusa, 4,614,105, Cl. 72-382.000.

Tsuno, Nobuo; and Ishida, Yoshihiko, to NGK Insulators, Ltd. Metal-ceramic composite body and a method of manufacturing the same. 4,614,453, Cl. 403-30.000.

Tsuruta, Masahiko, to Victor Company of Japan, Ltd. Recording/reproduced signal switching system for a 4-head type recording and reproducing apparatus. 4,614,985, Cl. 360-64.000.

Tsuyuguchi, Seiichi: *See—*
Kimura, Takayoshi; and Tsuyuguchi, Seiichi, 4,614,542, Cl. 75-76.000.

Tufts, Timothy A.: *See—*
Goel, Anil B.; Blackburn, Peggy A.; and Tufts, Timothy A., 4,614,786, Cl. 528-60.000.

Tyson, William H., Jr.: *See—*
Stuart, Frank A.; and Tyson, William H., Jr., 4,614,597, Cl. 210-772.000.

Ube Industries, Ltd.: *See—*
Hirai, Koichi; Uda, Taizo; and Nakamura, Yasuo, 4,614,728, Cl. 502-244.000.
Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, 4,614,690, Cl. 428-614.000.

Uchibori, Tsuyoshi: *See—*
Seino, Hajime; Uchibori, Tsuyoshi; Inamasu, Sachiko; and Nishitani, Toshiyuki, 4,614,718, Cl. 435-72.000.

Uchimoto, Yoshihiro: *See—*
Oka, Tateki; and Uchimoto, Yoshihiro, 4,614,697, Cl. 430-103.000.

Uda, Taizo: *See—*
Hirai, Koichi; Uda, Taizo; and Nakamura, Yasuo, 4,614,728, Cl. 502-244.000.

Ueki, Yoshiharu: *See—*
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kozo; and Hattori, Sadami, 4,614,880, Cl. 307-200.00A.

Ueno, Toshihiko; and Tanimoto, Sadao, to Bando Chemical Industries, Ltd. Pin tractor. 4,614,287, Cl. 226-74.000.

Uhing, Joachim. Rolling nut for transforming a rotary movement of a shaft into a thrust movement of the rolling unit. 4,614,124, Cl. 74-89.000.

Ulmer, Harry E.: *See—*
Mathew, Chempolil T.; and Ulmer, Harry E., 4,614,813, Cl. 558-7.000.

Umebayashi, Kazuyuki, to Aisin Seiki K.K. Road-vehicle telephone apparatus. 4,614,839, Cl. 179-2.00E.

Umehara, Masaakira, to Ricoh Co., Ltd. Optical information recording medium. 4,614,705, Cl. 430-286.000.

Umeji, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal isolator with optical fiber grounding means. 4,614,873, Cl. 250-551.000.

Umemoto, Koji: *See*—
Ikenaga, Katsuzi; Takai, Masao; Nakashima, Nobuyuki; and Umemoto, Koji, 4,614,410, Cl. 350-507.000.
Ungerboeck, Gottfried: *See*—
Chevillat, Pierre R.; Kaeser, Hans P.; Maiwald, Dietrich G. U.; and Ungerboeck, Gottfried, 4,615,004, Cl. 364-200.000.
Union Carbide Corporation: *See*—
Rosen, Meyer R.; and Marlin, Lawrence, 4,614,539, Cl. 75-3.000.
Schilling, Curtis L., Jr., 4,614,812, Cl. 556-406.000.
Union Oil Company of California: *See*—
Watkins, David R.; and O'Donnell, Edward J., 4,614,236, Cl. 166-304.000.
U.S. Computer Systems: *See*—
Clupper, Charles B.; and Mathews, Robert J., 4,614,970, Cl. 358-120.000.
United States of America
Air Force: *See*—
Floyd, Robert E., 4,614,919, Cl. 333-133.000.
Johnson, Richard W., 4,614,429, Cl. 356-343.000.
Savage, Steven J., 4,614,220, Cl. 164-461.000.
Snyder, Howard E., 4,614,466, Cl. 409-179.000.
Yarman, Binboga S., 4,614,921, Cl. 333-139.000.
Army: *See*—
Honeycutt, Thomas E.; and Roberts, Thomas G., 4,614,913, Cl. 330-4.300.
Energy: *See*—
Googin, John M.; Napier, John M.; Makarewicz, Mark A.; and Meredith, Paul F., 4,614,592, Cl. 210-679.000.
Sheldon, Peter; and Hayes, Russell E., 4,614,564, Cl. 156-657.000.
National Aeronautics and Space Administration: *See*—
Harris, Ronald P.; Holland, Lawrence R.; and Smith, Robbie E., 4,614,428, Cl. 356-246.000.
Navy: *See*—
Addamiano, Arrigo, 4,614,672, Cl. 427-249.000.
Adrian, Donald J.; Christensen, Lawrence E.; and Hanselman, James C., 4,614,918, Cl. 332-16.00R.
Kersten, Gerard M.; and Ferrante, Ronald A., 4,614,403, Cl. 350-252.000.
Willer, Rodney L.; and Atkins, Ronald L., 4,614,800, Cl. 544-335.000.
U.S. Philips Corporation: *See*—
Coulmance, Jean-Pierre, 4,614,843, Cl. 179-81.00R.
Geenen, Constant J. M.; and Elshof, Leonardus A. M., 4,614,893, Cl. 313-403.000.
Gerkema, Jan; and Pelzer, Jozef B., 4,614,445, Cl. 384-368.000.
Gerrits, Wilhelmus P. M.; and Huber, Alois, 4,614,315, Cl. 242-200.000.
Koorneef, Jacob; Fastenau, Robert H. J.; and van der Heijden, Paulus J. J. M., 4,614,501, Cl. 445-47.000.
Rammos, Emmanuel, 4,614,947, Cl. 343-778.000.
Ruyten, Henricus M., 4,614,289, Cl. 226-181.000.
Schmedemann, Walter, 4,615,042, Cl. 378-209.000.
Vry, Michael G., 4,615,025, Cl. 370-32.000.
United Technologies Corporation: *See*—
Kesten, Arthur S., 4,614,176, Cl. 126-110.00R.
Rosenbush, David M.; and Couch, Robert P., 4,615,008, Cl. 364-431.020.
Unitika Ltd.: *See*—
Masumoto, Tsuyoshi; Hamashima, Tatsuo; and Hagiwara, Michiaki, 4,614,221, Cl. 164-462.000.
Universite Laval: *See*—
Arseneault, Pierre-Michel; Boulianne, Michel; Cloutier, Louis; Ghosh, Sanjib K.; Labissonniere, Paul; Marcotte, Pierre; and Nguyen, Dinh N., 4,614,499, Cl. 434-262.000.
University of Illinois, The Board of Trustees of the: *See*—
Tsibris, John C. M.; and Spellacy, William N., 4,614,715, Cl. 435-28.000.
University of Rochester: *See*—
Chavin, Stephen I.; and Fay, Philip J., 4,614,795, Cl. 530-383.000.
UOP Inc.: *See*—
Dolejs, Charles A., 4,614,204, Cl. 137-625.110.
Lambert, Susan L.; Lawson, Randy J.; Johnson, Russell W.; and Gilson, Jean-Pierre, 4,614,834, Cl. 585-419.000.
Oroskar, Anil R., 4,614,205, Cl. 137-625.110.
Upjohn Company, The: *See*—
Baldwin, Thomas O.; Holzman, Thomas F.; Satoh, Paul S.; and Yein, Frederick S., 4,614,712, Cl. 435-4.000.
Gammill, Ronald B., 4,614,809, Cl. 549-387.000.
VanRheenen, Verlan H., 4,614,621, Cl. 260-397.450.
Urbach, Hansjorg; Henning, Rainer; and Becker, Reinhard, to Hoechst Aktiengesellschaft. Bicyclic amino acids as intermediates in the preparation of tricyclic amino acids and processes for their preparation. 4,614,805, Cl. 548-427.000.
Urban, Manfred: *See*—
Spietschka, Ernst; and Urban, Manfred, 4,614,803, Cl. 546-98.000.
Urs, Venkataramaraj S.: *See*—
Grelle, Peter F.; and Urs, Venkataramaraj S., 4,614,157, Cl. 102-466.000.
Uryo, Kazunori: *See*—
Nara, Hajime; Kosugi, Kimihiro; and Uryo, Kazunori, 4,614,952, Cl. 346-139.00R.
Usagawa, Mitsugu. Combination measuring apparatus. 4,614,244, Cl. 177-58.000.
Usami, Ryuuzi, to Casio Computer Co., Ltd. Automatic music playing apparatus. 4,614,983, Cl. 360-4.000.
Ushimaru, Koichi: *See*—
Kawamata, Masanobu; Ushimaru, Koichi; and Yamane, Shuji, 4,614,796, Cl. 536-5.000.
Ushio, Hideaki: *See*—
Hayashi, Tadayoshi; and Ushio, Hideaki, 4,614,172, Cl. 123-188.00S.
Usui, Minoru, to Casio Computer Co., Ltd. Electronic apparatus with magnetic recording and reproducing device. 4,615,024, Cl. 369-59.000.
USV Pharmaceutical Corp.: *See*—
Loev, Bernard; Jones, Howard; and Chan, Wan-kit, 4,614,747, Cl. 514-529.000.
Vaccaro, Robert K., to Syntex (U.S.A.) Inc. Swivel for an illuminated dental handpiece. 4,614,498, Cl. 433-126.000.
Valbjorn, Knud V.; and Meldgaard, Poul O., to Danfoss A/S. Valve for volatile liquids, particularly expansion valve for refrigeration plants. 4,614,327, Cl. 251-129.160.
Valcho, Joseph J.; Slama, Francis J.; Strukl, Joseph S.; and Park, Chang-Man, to Amoco Corporation. Lubricant overbased detergent-dispersants with improved solubility. 4,614,602, Cl. 252-33.300.
Valdiserri, Leo L., to Borg-Warner Chemicals, Inc. Stabilization composition for clean, impact-modified PVC. 4,614,756, Cl. 524-147.000.
Vallourec: *See*—
Ernst, Roland; Garnier, Marcel; Giroutru, Michel; and Moreau, Rene , 4,614,225, Cl. 164-504.000.
Fradin, Louis; Plaquin, Bernard; and Salkin, Herve , 4,614,120, Cl. 73-761.000.
Valmet Oy: *See*—
Koponen, Martti; Pullinen, Martti; Koski, Erkki; and Koskimies, Jouni, 4,614,566, Cl. 162-301.000.
Riihinen, Jaakko, 4,614,565, Cl. 162-206.000.
Valyi, Gabriella; and Kutassy, Eva, to Delta Vas-, Muanyag- ES Szolgaltato Ipari Szovetkezet. Compositions for the post-treatment of seborrheal, acneiform processes and a process for the preparation thereof. 4,614,652, Cl. 424-195.100.
van der Heijden, Paulus J. J. M.: *See*—
Koorneef, Jacob; Fastenau, Robert H. J.; and van der Heijden, Paulus J. J. M., 4,614,501, Cl. 445-47.000.
Vanderjagt, John A. Pump with replaceable cartridge. 4,614,481, Cl. 417-270.000.
van der Loos, Jozef L. M.: *See*—
Ashida, Kaneyoshi; van der Loos, Jozef L. M.; and Frisch, Kurt C., 4,614,615, Cl. 540-525.000.
van der Struys, Frank V.: *See*—
Muldery, Hendrikus; van der Struys, Frank V.; and Schubert, Heinz, 4,614,325, Cl. 249-120.000.
Van Emelen, Rik: *See*—
Wille, Marc; Verhoeven, Rik; and Van Emelen, Rik, 4,614,557, Cl. 156-85.000.
van Geenen, Albert A.: *See*—
Bongers, Jozef J. M.; and van Geenen, Albert A., 4,614,792, Cl. 528-318.000.
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., to International Flavors & Fragrances Inc. Article which dispenses at a constant rate a volatile composition, and process for using same. 4,614,299, Cl. 239-6.000.
vanOmmering, Gerrit; and Koehler, Charles W., to Ford Aerospace & Communications Corporation. Method for making a lightweight bipolar metal-gas battery. 4,614,025, Cl. 29-623.100.
VanRheenen, Verlan H., to Upjohn Company, The. Ethynylation of 16-methylene-17-keto steroids. 4,614,621, Cl. 260-397.450.
Varian Associates, Inc.: *See*—
Lint, James D.; and Kent, Bryan P., 4,614,030, Cl. 29-885.000.
Vasipari Kutato es Fejleszto Vallalat: *See*—
Nagy, Sandor; Meszaros, Jozsef; Ban, Akos; Horvath, Janos; Pethes, Andras; Schottner, Lajos; and Sziklavari, Janos, 4,614,540, Cl. 75-59.130.
VEB Forschung und Entwicklung: *See*—
Fiedler, Gerhard; and Fritzsche, Werner, 4,614,044, Cl. 34-25.000.
Vendramini, Dante. Machine for manufacturing structural members by braiding threads, and structural members obtained thereby. 4,614,147, Cl. 87-5.000.
Venturetech Enterprises, Inc.: *See*—
Sigerist, Helmut, 4,614,488, Cl. 425-233.000.
Verhoef, Willem L. Apparatus for folding a box or trough from a blank. 4,614,511, Cl. 493-125.000.
Verhoeven, Rik: *See*—
Wille, Marc; Verhoeven, Rik; and Van Emelen, Rik, 4,614,557, Cl. 156-85.000.
Vermeulen-Hollandia Octrooien II B.V.: *See*—
Boots, Robert T., 4,614,009, Cl. 74-501.000.
Versace, Richard W.: *See*—
Girijavallabhan, Viyyoor M.; Ganguly, Ashit K.; Pinto, Patrick A.; and Versace, Richard W., 4,614,738, Cl. 514-194.000.
Vestol SA.: *See*—
Gschwind, Peter, 4,614,372, Cl. 285-356.000.
Vetamix: *See*—
Elliott, Richard L.; and Ruehle, Paul H., 4,614,798, Cl. 544-53.000.
Vial, Harold W., to Hewlett Packard Company. Electric tool for desoldering surface mounted devices. 4,614,858, Cl. 219-230.000.
Vianova Kunstharz, A.G.: *See*—
Daimer, Wolfgang; Gmoser, Johann; and Schipfer, Rudolf, 4,614,783, Cl. 525-504.000.
Victor Company of Japan, Ltd.: *See*—
Ibaraki, Hirozi, 4,614,982, Cl. 358-342.000.

Ishigaki, Yukinobu; and Hirohashi, Kazutoshi, 4,614,910, Cl. 329-50.000.
Takanashi, Itsuo; Nakagaki, Shintaro; and Kuriyama, Takashi, 4,614,965, Cl. 358-44.000.
Tsuruta, Masahiko, 4,614,985, Cl. 360-64.000.

Victor Company of Japan, Ltd.: *See—*
Sugiyama, Hiroyuki; Amano, Yoshiaki; Abe, Ryozo; Takahashi, Nobuaki; Shibamoto, Takeshi; Sato, Hideo; and Tanaka, Koji, 4,614,979, Cl. 358-335.000.

Vinkovits, Sandor: *See—*
Rajkai, Gabor; Szabo, Rozalia; Dohar, Istvan; Vinkovits, Sandor; Hetei, Marta; and Florian, Gyorgy, 4,615,027, Cl. 364-726.000.

Visky, Gyorgy: *See—*
Kreidl, Janos; Czibula, Laszlo ; Visky, Gyorgy; Farkas nee Kirjak, Maria; Meszaros nee Brill, Judit; Groo, Dora; Palosi, Eva; Karpati, Egon; and Szporny, Laszlo , 4,614,824, Cl. 546-51.000.

Vogel, Xaver, to BBC Brown, Boveri & Company Limited. Cooling body for the liquid cooling of high-power semiconductor components. 4,614,227, Cl. 165-80.400.

Voigt, Reiner: *See—*
Schwabe, Peter; and Voigt, Reiner, 4,614,758, Cl. 524-487.000.

Voith S.A. Maquinas E Equipamentos: *See—*
Soares, Adelino H. F., 4,614,523, Cl. 48-76.000.

von Gunten, Marc K.; Cook, Benjamin H.; and Gerstenberger, David C., to Spectra-Physics, Inc. Ultra-narrow bandwidth optical thin film interference coatings for single wavelength lasers. 4,615,034, Cl. 372-99.000.

von Ploetz, Klaus: *See—*
Ambrosi, Luciano; von Ploetz, Klaus; Zangs, Ludger; and Nordmeyer, Friedrich, 4,615,036, Cl. 373-93.000.

Vry, Michael G., to U.S. Philips Corporation. Data transmission system. 4,615,025, Cl. 370-32.000.

W H Industries Inc.: *See—*
Malhotra, Shashi, 4,614,171, Cl. 123-90.440.

W. R. Grace & Co.: *See—*
Marans, Nelson S.; and Pulford, Stephen M., 4,614,762, Cl. 525-61.000.

Wacker-Chemie GmbH: *See—*
Knoch, Heinrich; Schwetz, Karl A.; Lipp, Alfred; and Bechler, Eckhart, 4,614,724, Cl. 501-87.000.

Wagner, Friedhelm: *See—*
Dietze, Herbert; Huebner, Dietmar; Wagner, Friedhelm; Duebon, Manfred; and Wenz, Gerd, 4,614,269, Cl. 206-387.000.

Wakeman, Thomas G.: *See—*
Sterman, Albert P.; Wakeman, Thomas G.; and Williams, Jesse J., 4,614,082, Cl. 60-39.320.

Waku, Yoshiharu: *See—*
Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, 4,614,690, Cl. 428-614.000.

Walden, Jack M.: *See—*
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Home: C., 4,615,015, Cl. 364-706.000.

Waldrich, Otto; and Eckstein, Rolf, to Werkzeugmaschinenfabrik Adolf Waldrich Cobgurg GmbH & Co. Apparatus for facilitating the rotation of a tool-receiving device. 4,614,468, Cl. 409-211.000.

Walker, Clarence O., to Texaco Inc. Encapsulated lime as a lost circulation additive for aqueous drilling fluids. 4,614,599, Cl. 252-8.512.

Walter Eckold GmbH & Co. KG: *See—*
Eckold, Gerd-Jurgen; and Maab, Hans, 4,614,017, Cl. 29-243.530.

Walter, Wilhelm: *See—*
Dreschmann, Peter; Walter, Wilhelm; Scharting, Gunter; and Neugebauer, Steffen, 4,614,446, Cl. 384-484.000.

Walters, John M., to Westinghouse Electric Corp. 17×17 Nuclear fuel assembly thimble tube cap. 4,614,636, Cl. 376-451.000.

Walters, Paul W.; Raiche, H. Anthony; Harness, Ronald L.; and Quodala, Genaro M., to Ashland Oil, Inc. Process and apparatus for cooling during regeneration of fluid cracking catalyst. 4,614,726, Cl. 502-41.000.

Wang, Cheng H. Angle adjusting device. 4,614,452, Cl. 403-27.000.

Wang, Chun-Jong. Method and device for detection of a blanket or the like being kicked off the body of a sleeping person. 4,614,939, Cl. 340-573.000.

Wangerin, Gerhard: *See—*
Fritz, Manfred; Scheel, Hans; and Wangerin, Gerhard, 4,614,142, Cl. 83-496.000.

Waring, Charles D.: *See—*
Moseley, Charles D., Jr.; and Waring, Charles D., 4,614,303, Cl. 239-499.000.

Warner-Lambert Company: *See—*
Hamilton, Harriet W.; Patt, William C.; and Trivedi, Bharat K., 4,614,732, Cl. 514-46.000.
Zee-Cheng, Robert K.; and Cheng, Chia C., 4,614,820, Cl. 544-126.000.

Watanabe, Hideo: *See—*
Suzuki, Akira; Watanabe, Hideo; Hashimoto, Mitsuru; Mochizuki, Nobuo; Kubo, Keishi; Tatsumi, Susumu; and Kawanishi, Toshiyuki, 4,614,682, Cl. 428-213.000.

Watanabe, Hiroyuki; Noguchi, Kohkichi; Kase, Toshio; and Akita, Shuichi, to Nippon Zeon Co., Ltd. Process for making diene copolymer rubbers. 4,614,771, Cl. 525-351.000.

Watanabe, Kunio: *See—*
Furukawa, Takashi; Endo, Michio; Takemoto, Nagayasu; and Watanabe, Kunio, 4,614,551, Cl. 148-12.00F.

Watanabe, Noboru; Shomoda, Hideyoshi; and Kubo, Yoichiro, to Nippon Zeon Co., Ltd. Oil- and heat-resistant rubber composition comprising nitrile containing rubber and fluorine containing rubber. 4,614,779, Cl. 525-199.000.

Watanabe, Shunji: *See—*
Endo, Akinori; Shimanari, Tatsumi; and Watanabe, Shunji, 4,614,424, Cl. 355-56.000.

Watkins, David R.; and O'Donnell, Edward J., to Union Oil Company of California. Self-breaking foamed oil-in-water emulsion for stimulation of wells blocked by paraffinic deposits. 4,614,236, Cl. 166-304.000.

Watson, Robert E.: *See—*
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.

Weaver, Charles A., to RCA Corporation. Apparatus for holding a part in a wave soldering machine. 4,614,294, Cl. 228-37.000.

Webb, James R.: *See—*
Webb, Richard C.; and Webb, James R., 4,614,899, Cl. 315-411.000.

Webb, Richard C.; and Webb, James R., to Data Ray Corporation. Voltage regulator for pulsed voltage power supplies. 4,614,899, Cl. 315-411.000.

Webb, Stephen; and Neville, Roy. Solenoid energizing circuit for an electric arc welding tool. 4,614,857, Cl. 219-136.000.

Weber, Gunter B.: *See—*
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.

Weber, Hans: *See—*
Epple, Gerhard; Krallmann, Reinhold; Kermer, Wolf-Dieter; and Weber, Hans, 4,614,804, Cl. 548-160.000.

Weber, Hans-Leo; Claussen, Uwe; and Hannes, Hellmut, to Bayer Aktiengesellschaft. Process for the production of plastic films having improved optical properties. 4,614,634, Cl. 264-341.000.

Weber, Jerry L.; and Yarbrough, Don L., to Deere & Company. Chaff spreading arrangement for a combine. 4,614,197, Cl. 130-27.00R.

Weener Plastik GmbH & Co. KG: *See—*
Fudalla, Manfred; and Steiner, Walter, 4,614,285, Cl. 222-454.000.

Weibye, Bjarne, to Apothekernes Laboratorium A.S. Process for producing quick cooking vegetables. 4,614,660, Cl. 426-461.000.

Weidenbruch, Hans U.; and Musmann, Hans G., to Ant Nachrichtentechnik GmbH. Method and arrangement for interpolative A/D conversion. 4,614,936, Cl. 340-347.0AD.

Weinberg, Alvin H.: *See—*
Jones, W. Kinzy; and Weinberg, Alvin H., 4,614,194, Cl. 128-419.00P.

Weis, Frank G., to Smith & Loveless. Method and apparatus for biological aerobic wastewater treatment. 4,614,589, Cl. 210-608.000.

Weisberg, Leonard R.: *See—*
Arch, David K.; Scott, M. Walter; Smith, Darryl L.; and Weisberg, Leonard R., 4,614,957, Cl. 357-16.000.

Weiss, Stefan: *See—*
Helfert, Herbert; Balzer, Wolf-Dieter; Hatzmann, Guenter; Dietsche, Wolfram; Hettche, Albert; and Weiss, Stefan, 4,614,604, Cl. 252-56.00S.

Weitman, Irwin, to Pittway Corporation. Dual channel pyroelectric intrusion detector. 4,614,938, Cl. 340-567.000.

Welander, Thomas G.: *See—*
Andersson, Per-Erik; and Welander, Thomas G., 4,614;587, Cl. 210-603.000.

Welch, Henry H.; and Felici, Corindo, to POLI-MAK S.p.A. Double multichromatic photometer with a single light-source and a single detector, particularly for performing chemical and clinical analyses. 4,614,434, Cl. 356-418.000.

Welden, David P. Multiple burner control apparatus. 4,614,491, Cl. 431-60.000.

Welt, Martin J.: *See—*
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.

Weltec Digital, Inc.: *See—*
Mahnke, Paul H., 4,614,988, Cl. 360-97.000.

Wendt, Timothy A.: *See—*
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.

Wenninger, Fred, Jr.: *See—*
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.

Wenz, Gerd: *See—*
Dietze, Herbert; Huebner, Dietmar; Wagner, Friedhelm; Duebon, Manfred; and Wenz, Gerd, 4,614,269, Cl. 206-387.000.

Wenzel, Franz: *See—*
Arndt, Peter J.; Wenzel, Franz; Muller, Manfred; and Schlosser, Fritz, 4,614,827, Cl. 556-131.000.

Wenzel, Michael D. Tool for floor covering installation. 4,614,349, Cl. 280-43.100.

Werkzeugmaschinenfabrik Adolf Waldrich Cobgurg GmbH & Co.: *See—*
Waldrich, Otto; and Eckstein, Rolf, 4,614,468, Cl. 409-211.000.

Werner & Pfleiderer: *See—*
Lauser, Wolfgang, 4,614,307, Cl. 241-101.400.

Wernicke, Friedrich C.: *See—*
Brosch, Rudolf; Keinert, Joachim; Klink, Erich; and Wernicke, Friedrich C., 4,614,885, Cl. 307-513.000.

Westermeyer, Joseph, to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co. Automatic switch with an arc blast field. 4,614,928, Cl. 335-201.000.

Western Litho Plate & Supply Co.: *See—*
Copeland, Harry J.; and Powers, John W., 4,614,425, Cl. 355-99.000.

Westerwaelder Eisenwerk Gerhard GmbH: *See—*
Gerhard, Helmut, 4,614,278, Cl. 220-1.500.

Westfalia Separator AG: *See—*
Zettler, Karl-Heinz; Bruning, Paul; Schmidt, Reinhard; and Hemfort, Heinrich, 4,614,598, Cl. 210-781.000.

Westinghouse Electric Corp.: *See—*
Bluzer, Nathan, 4,614,960, Cl. 357-24.000.
Walters, John M., 4,614,636, Cl. 376-451.000.
Yannopoulos, Lymperios N., 4,614,669, Cl. 427-87.000.

Westvaco Corporation: *See—*
Schilling, Peter; and Braddon, David V., 4,614,600, Cl. 252-8.553.

Weyerhaeuser Company: *See—*
Cherry, James H., 4,614,298, Cl. 229-109.000.

Wheeler, James W., to Du Pont de Nemours, E. I., and Company. Direct positive dyes made from 3-indolizine carboxaldehyde. 4,614,801, Cl. 544-345.000.

Whirlpool Corporation: *See—*
Martin, William J., 4,614,003, Cl. 15-339.000.

White, Donald L.: *See—*
Feldman, Martin; Heimann, Peter A.; Johnson, William A.; Retajczyk, Theodore F., Jr.; and White, Donald L., 4,614,433, Cl. 356-401.000.

White, Donnie R.; Hobgood, David F.; Swim, Larry E.; and Staley, Leo D., to Kraft, Inc. Methods and apparatus for sanitary steam injection. 4,614,661, Cl. 426-511.000.

Whiteside, Ross C., Jr.: *See—*
Dettloff, Marvin L.; Steele, Dennis L.; and Whiteside, Ross C., Jr., 4,614,788, Cl. 528-91.000.

Widen, Melinda A.: *See—*
Bradley, John J.; Stoffers, Brian L.; Staplin, Theodore R., Jr.; and Widen, Melinda A., 4,615,016, Cl. 364-756.000.

Widicus, Warren A.: *See—*
Sheng, Yung-Bool D.; and Widicus, Warren A., 4,614,657, Cl. 426-96.000.

Wiechert, Rudolf: *See—*
Petzoldt, Karl; Wiechert, Rudolf; Laurent, Henry; Nickisch, Klaus; and Bittler, Dieter, 4,614,616, Cl. 540-4.000.

Wiegers, Wilhelmus J.: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,614,831, Cl. 560-126.000.

Wightman, Lawrance W. Cup and apparatus and method for making it. 4,614,280, Cl. 220-67.000.

Willard, G. Fred: *See—*
Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, 4,614,790, Cl. 528-191.000.
Hutchings, David A.; Sieloff, Gloria M.; Lee, David M.; and Willard, G. Fred, 4,614,791, Cl. 528-193.000.

Wille, Marc; Verhoeven, Rik; and Van Emelen, Rik, to Raychem Corporation. Pressure retaining enclosure. 4,614,557, Cl. 156-85.000.

Willer, Rodney L.; and Atkins, Ronald L., to United States of America, Navy. Synthesis of cyclic dinitramines useful as explosive and propellant ingredients, gas generants and in other ordnance applications. 4,614,800, Cl. 544-335.000.

Wm. C. Staley Machinery Corporation: *See—*
Sardella, Louis M., 4,614,335, Cl. 271-112.000.

Wm. Wrigley Jr. Company: *See—*
Ream, Ronald L.; Moore, David M.; and Corriveau, Christine L., 4,614,654, Cl. 426-5.000.

Williamette Valley Co.: *See—*
Smith, Albert C.; and Owen, Dennis W., 4,614,555, Cl. 156-64.000.

Williams, Charles E.: *See—*
Carson, Kent R.; Luttmer, Joseph D.; Williams, Charles E.; McKee, William R.; Tso, Stephen T.; and Johnson, Elwin L., 4,614,835, Cl. 136-250.000.

Williams, James E.: *See—*
Lubinsky, Anthony R.; and Williams, James E., 4,614,420, Cl. 355-3.0DD.

Williams, Jesse J.: *See—*
Sterman, Albert P.; Wakeman, Thomas G.; and Williams, Jesse J., 4,614,082, Cl. 60-39.320.

Williams, Peter S.: *See—*
Drury, David J.; and Williams, Peter S., 4,614,816, Cl. 560-243.000.

Wilson, Charles F.: *See—*
Hsu, Michael S.; and Wilson, Charles F., 4,614,628, Cl. 264-61.000.

Wilson, Christopher J.: *See—*
Brunt, William H.; and Wilson, Christopher J., 4,614,439, Cl. 366-154.000.

Wilson, Earl E., to Crosby Group, Inc., The. Snatch block with improved hook bolt assembly. 4,614,332, Cl. 254-405.000.

Wilson, James E.; and Chalmers, Alexander J., to Peerless Confection Company. Filled sugar candies and a method of remelting and remolding such candies to produce home made molded hard sugar candies. 4,614,658, Cl. 426-103.000.

Wilson, William G. Methods of adding reactive metals to steels being continuously cast. 4,614,223, Cl. 164-473.000.

Wilson, William W., to Lumi-Lite Candle Company, Inc. Method of imparting color and/or fragrance to candle wax and candle formed therefrom. 4,614,625, Cl. 264-6.000.

Windish, Willis E.: *See—*
Nerstad, Karl A.; and Windish, Willis E., 4,614,133, Cl. 74-740.000.

Winkley, Michael W.: *See—*
Buzby, George C., Jr.; Winkley, Michael W.; and McCaully, Ronald J., 4,614,806, Cl. 548-491.000.

Wirsbo Bruks Aktiebolag: *See—*
Skarelius, Jerker, 4,614,208, Cl. 138-103.000.

Wirtgen, Reinhard. Apparatus for roughening road surfaces. 4,614,379, Cl. 299-39.000.

Witkowski, Joseph T.: *See—*
Chipkin, Richard E.; and Witkowski, Joseph T., 4,614,743, Cl. 514-258.000.

Wolf, Gerhard D.: *See—*
Ebneth, Harold; Preis, Lothar; Giesecke, Henning; and Wolf, Gerhard D., 4,614,684, Cl. 428-252.000.

Wolf, Kurt, to Kurt Wolf & Co. KG. Apparatus for temperature measurement in a saucepan heating system. 4,614,441, Cl. 374-130.000.

Wolff, George D. Position sensor for fuel injection apparatus. 4,614,111, Cl. 73-119.00A.

Wolff Walsrode Aktiengesellschaft: *See—*
Huhn, Helmut; and Karstens, Werner, 4,614,780, Cl. 525-329.100.

Wollenberg, Robert H., to Chevron Research Company. Modified succinimides (III). 4,614,603, Cl. 252-51.50A.

Wong, Winston W. Artificial leather with non-woven or fluffy cloth base and foamed PVC filler. 4,614,671, Cl. 427-245.000.

Woodway AG: *See—*
Schonenberger, Rolf, 4,614,337, Cl. 272-69.000.

Wright, James C. Closure and method for repair of a pressurized container. 4,614,281, Cl. 220-239.000.

Wright, James R.; and Huggins, Ronald B., to Simmonds Precision. Shielded cable terminal connection. 4,614,398, Cl. 339-143.00R.

Wright, Joseph M.: *See—*
Bolle, Fred; Herronen, John R.; and Wright, Joseph M., 4,614,108, Cl. 72-446.000.

Wright, Robert G. M., to Fisons plc. 6-substituted amino-4H-pyrano(3,2-G)quinoline-2,8-dicarboxylic acid intermediates. 4,614,802, Cl. 546-89.000.

Wroblowsky, Heinz-Jurgen: *See—*
Schallner, Otto; Gehring, Reinhold; Klauke, Erich; Stetter, Jorg; Wroblowsky, Heinz-Jurgen; Schmidt, Robert R.; and Santel, Hans-Joachim, 4,614,533, Cl. 71-92.000.

Wu, Frederick Y., to Perkin-Elmer Corporation, The. Apparatus for detecting defocus. 4,614,864, Cl. 250-201.000.

Wu, Kuo-shen. Cavity key duplicating machine. 4,614,465, Cl. 409-81.000.

Wulff, Claus: *See—*
Trabert, Ludwig; Binsack, Rudolf; Lindner, Christian; Merten, Josef; Haupt, Heinrich; Morbitzer, Leo; Weber, Gunter B.; and Wulff, Claus, 4,614,763, Cl. 525-66.000.

Wymann, Markus, to Bucher - Guyer AG. Stabilizer for vehicles. 4,614,358, Cl. 280-689.000.

Wyness, David K. Apparatus and method for dissolving a gas in an aqueous stream. 4,614,596, Cl. 210-754.000.

XCO International, Inc.: *See—*
Davis, Bayard C., 4,614,024, Cl. 29-612.000.

Xerox Corporation: *See—*
Daniele, Joseph J.; and Banton, Martin E., 4,614,908, Cl. 324-458.000.
Folkins, Jeffrey J.; Edmunds, Cyril G.; and Hart, Steven C., 4,614,165, Cl. 118-657.000.
Lubinsky, Anthony R.; and Williams, James E., 4,614,420, Cl. 355-3.0DD.
Patz, Herbert S., 4,614,419, Cl. 355-3.0DD.

Yabuki, Yoshiharu: *See—*
Sawada, Satoru; and Yabuki, Yoshiharu, 4,614,702, Cl. 430-203.000.

Yachi, Toshiaki: *See—*
Koizumi, Mitsuyoshi; Oshima, Yoshimasa; Akiyama, Nobuyuki; and Yachi, Toshiaki, 4,614,427, Cl. 356-237.000.

Yachida, Yoichi: *See—*
Matsumoto, Katsutake; and Yachida, Yoichi, 4,614,114, Cl. 73-313.000.

Yamada, Yukifumi: *See—*
Harada, Kuniyoshi; and Yamada, Yukifumi, 4,614,257, Cl. 192-8.00C.

Yamagiwa Corporation: *See—*
Enaka, Nobuhiro; Terada, Mitsuyoshi; Hashimoto, Yoshiro; Imabeppu, Shinichi; Kobayashi, Kuninori; and Shimamura, Akira, 4,614,996, Cl. 362-147.000.

Yamaguchi, Keisuke; and Ochiai, Eturo, to Konishiroku Photo Industry Co., Ltd. Toner container unit. 4,614,286, Cl. 222-505.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Ishino, Katsuya, 4,614,507, Cl. 474-101.000.

Yamamoto, Kazuo: *See—*
Miyakawa, Nobuhiro; Yano, Koji; Yamamoto, Kazuo; Higashiguchi, Teruaki; and Kawakami, Yoshinobu, 4,614,698, Cl. 430-106.600.

Yamamoto, Koji: *See—*
Hata, Yoshiaki; Matsumoto, Toshiaki; Tominaga, Shinji; Yamamoto, Koji; Yamashita, Maki; and Tanaka, Yoshihiro, 4,614,417, Cl. 354-403.000.

Yamamoto, Shoichi. Separating element for vibratory grain separator. 4,614,271, Cl. 209-694.000.

Yamamoto, Toshio: *See*—
Hakkaku, Kunio; Matsushita, Yoh; Tokumasu, Takahiko; and Yamamoto, Toshio, 4,614,949, Cl. 346-76.0PH.
Yamamoto, Yoko; Shigeta, Kunio; and Takahashi, Jiro, to Konishiroku Photo Industry Co., Ltd. Image forming process with magnetic brush development. 4,614,700, Cl. 430-122.000.
Yamamoto, Yoshiomi: *See*—
Fujishima, Tetsuro; and Yamamoto, Yoshiomi, 4,614,719, Cl. 435-85.000.
Yamamura, Takemi; Tokuse, Masahiro; and Waku, Yoshiharu, to UBE Industries, Ltd. Inorganic fiber-reinforced metallic composite material. 4,614,690, Cl. 428-614.000.
Yamanaka, Isao, to Honda Giken Kogyo Kabushiki Kaisha. Frame structure for a four-wheel drive vehicle. 4,614,249, Cl. 180-312.000.
Yamanaka, Masami, to Yamato Scale Company, Limited. Device for measuring force. 4,614,245, Cl. 177-210.0FP.
Yamane, Shuji: *See*—
Kawamata, Masanobu; Ushimaru, Koichi; and Yamane, Shuji, 4,614,796, Cl. 536-5.000.
Yamasa Shoyu Kabushiki Kaisha: *See*—
Fujishima, Tetsuro; and Yamamoto, Yoshiomi, 4,614,719, Cl. 435-85.000.
Kusakabe, Hitoshi; Yamauchi, Hiroshi; and Midorikawa, Yuichiro, 4,614,714, Cl. 435-25.000.
Yamasaki, Toshio, to Mattel, Inc. Walking toy vehicle with ramp. 4,614,504, Cl. 446-356.000.
Yamashita, Atsushi; Katoh, Tadayoshi; and Kurihara, Hiroshi, to Fujitsu Limited. Viterbi decoder with the pipeline processing function. 4,614,933, Cl. 340-347.0DD.
Yamashita, Kiichi; Tanizawa, Junpei; and Iwasaki, Takao, to Nippon Pressed Concrete Co., Ltd.; and Nippon Zenith Pipe Co., Ltd. Mold for producing concrete pipe. 4,614,324, Cl. 249-11.000.
Yamashita, Maki: *See*—
Hata, Yoshiaki; Matsumoto, Toshiaki; Tominaga, Shinji; Yamamoto, Koji; Yamashita, Maki; and Tanaka, Yoshihiro, 4,614,417, Cl. 354-403.000.
Yamato Scale Company, Limited: *See*—
Yamanaka, Masami, 4,614,245, Cl. 177-210.0FP.
Yamauchi, Hiroshi: *See*—
Kusakabe, Hitoshi; Yamauchi, Hiroshi; and Midorikawa, Yuichiro, 4,614,714, Cl. 435-25.000.
Yamazaki, Hideo: *See*—
Furuya, Inosuke; and Yamazaki, Hideo, 4,614,665, Cl. 426-634.000.
Yamazaki, Kisuke: *See*—
Sakuma, Kiyoshi; Okada, Tetsuji; Seshimo, Yu; Maruyama, Kazuhiro; Yamazaki, Kisuke; and Akiyama, Yuichi, 4,614,230, Cl. 165-151.000.
Yamazaki, Shigeru; Nirasawa, Kazuo; and Nishimori, Sinji, to Ebara Corporation. Capacitor-run dry type submersible motor assembly with a built-in starting capacitor. 4,614,904, Cl. 318-793.000.
Yan, Johnson K.; Szabo, Nicholas S.; and Chen, Lish-Yann, to Singer Company, The. Method and apparatus for texture generation. 4,615,013, Cl. 364-521.000.
Yanagida, Makoto: *See*—
Sekimoto, Yukihiko; Yanagida, Makoto; and Kanda, Shoichi, 4,614,601, Cl. 252-8.551.
Yanazawa, Hiroshi: *See*—
Matsuzawa, Toshiharu; Iwayanagi, Takao; Douta, Kikuo; Yanazawa, Hiroshi; Kohashi, Takahiro; and Nonogaki, Saburo, 4,614,706, Cl. 430-313.000.
Yanmar Diesel Engine Co. Ltd.: *See*—
Kaneko, Teruji; Kawabe, Toshihiko; and Awasaka, Moriyoshi, 4,614,090, Cl. 62-158.000.
Yannopoulos, Lymperios N., to Westinghouse Electric Corp. Antimony-doped stannic oxide thick film gas sensor. 4,614,669, Cl. 427-87.000.
Yano, Koji: *See*—
Miyakawa, Nobuhiro; Yano, Koji; Yamamoto, Kazuo; Higashiguchi, Teruaki; and Kawakami, Yoshinobu, 4,614,698, Cl. 430-106.600.
Yarbrough, Don L.: *See*—
Weber, Jerry L.; and Yarbrough, Don L., 4,614,197, Cl. 130-27.00R.
Yarman, Binboga S., to United States of America, Air Force. Low pass π section digital phase shifter apparatus. 4,614,921, Cl. 333-139.000.
Yasuda, Tomio: *See*—
Kakinami, Toshiaki; and Yasuda, Tomio, 4,614,248, Cl. 180-79.100.
Yasui, Kazuomi: *See*—
Saito, Junichi; Yasui, Kazuomi; Shiokawa, Kozo; and Kamochi, Atsumi, 4,614,536, Cl. 71-94.000.
Yates, Donald N., Jr.: *See*—
Colle, Edward A., Jr.; George, Flint R.; and Yates, Donald N., Jr., 4,614,156, Cl. 102-312.000.
Yates, Gregory S.: *See*—
Babecki, Glenn R.; Kaplan, Frank; Liu, Hueichi R.; MacLachlan, George F.; McDonald, John F.; Palframan, John D.; Welt, Martin J.; Wendt, Timothy A.; and Yates, Gregory S., 4,614,841, Cl. 179-18.0ES.
Yein, Frederick S.: *See*—
Baldwin, Thomas O.; Holzman, Thomas F.; Satoh, Paul S.; and Yein, Frederick S., 4,614,712, Cl. 435-4.000.
Yissum Research Development Company of the Hebrew University of Jerusalem: *See*—
Gandolfi, Ottavio, 4,614,811, Cl. 556-137.000.
Yockey, Francis J.: *See*—
Olander, Emil E., Jr.; James, Rex I.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,615,015, Cl. 364-706.000.
Yoinara, Koichi: *See*—
Nadamoto, Hiroyasu; and Yoinara, Koichi, 4,614,087, Cl. 62-126.000.
Yokoya, Hiroaki: *See*—
Kitatani, Katsugi; Murata, Masataka; Yokoya, Hiroaki; and Suzuki, Nobuo, 4,614,699, Cl. 430-115.000.
Yoneda, Kenichi; Miyake, Masato; Muramatsu, Kenzo; and Tatani, Atsushi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for treating effluent in exhaust gas treating apparatus. 4,614,645, Cl. 423-240.000.
Yoshida Kogyo K. K.: *See*—
Matsubara, Isamu, 4,614,067, Cl. 52-235.000.
Tanikawa, Shinji; and Nawa, Koichiro, 4,614,069, Cl. 52-235.000.
Yoshida, Kotaro: *See*—
Taniguchi, Yasuyuki; Yoshida, Kotaro; Takeshi, Yasuhira; Michishita, Teruo; Kawai, Michio; and Kawakami, Makoto, 4,614,461, Cl. 405-211.000.
Yoshida, Masanobu; and Itano, Kiyoshi, to Fujitsu Limited. Integrated semiconductor circuit device for generating a switching control signal using a flip-flop circuit including CMOS FET's and flip-flop setting means. 4,614,881, Cl. 307-219.000.
Yoshida, Masanobu; and Itano, Kiyoshi, to Fujitsu Limited. Semiconductor memory device. 4,615,021, Cl. 365-189.000.
Yoshida, Takashi: *See*—
Hayashi, Hiroshi; Katoh, Kazunobu; and Yoshida, Takashi, 4,614,681, Cl. 428-201.000.
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Ohara, Minoru; Kobayashi, Akira; and Akatsu, Tsuneo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polysaccharides pharmaceutical compositions and the use thereof. 4,614,733, Cl. 514-54.000.
Yoshimura, Tsuneo: *See*—
Kezuka, Seiju; Yoshimura, Tsuneo; Kato, Tadayoshi; and Iida, Moriya, 4,614,632, Cl. 264-280.000.
Yoshino, Tooru: *See*—
Nakamura, Kazuharu; and Yoshino, Tooru, 4,614,493, Cl. 431-341.000.
Yoshiura, Shoichiro, to Sharp Kabushiki Kaisha. Variable magnification copying apparatus. 4,614,423, Cl. 355-55.000.
Young, Joseph C. Remote controlled driving system for a boat. 4,614,900, Cl. 318-16.000.
Youngnam Textile Co., Ltd.: *See*—
Kim, Ki W., 4,614,081, Cl. 57-12.000.
Yu, Keung-Yi P., executor: *See*—
Lim, Tong L., deceased; Yu, Keung-Yi P., executor; and Gitlin, Richard D., 4,615,038, Cl. 375-14.000.
Yunoki, Yutaka; and Kimura, Kenji, to Olympus Optical Co., Ltd. Electronic still camera for generating long time exposure by adding results of multiple short time exposures. 4,614,966, Cl. 358-44.000.
Zachariades, Anagnostis E.: *See*—
Economy, James; and Zachariades, Anagnostis E., 4,614,629, Cl. 264-176.100.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Elser, Dieter, 4,614,127, Cl. 74-422.000.
Zangs, Ludger: *See*—
Ambrosi, Luciano; von Ploetz, Klaus; Zangs, Ludger; and Nordmeyer, Friedrich, 4,615,036, Cl. 373-93.000.
Zavracky, Paul M.; Senturia, Stephen D.; and Morrison, Richard H., Jr., to Foxboro Company, The. Resonant hollow beam and method. 4,614,119, Cl. 73-704.000.
Zeadman, Zvi; Goldenberg, Carol; and Grinboum, Zvi, to M.A.L. Industrial Automation Systems Ltd. Reciprocatable-plunger type control valve. 4,614,328, Cl. 251-129.170.
Zee-Cheng, Robert K.; and Cheng, Chia C., to Warner-Lambert Co. 3,6-disubstituted-1,8-naphthalimides. 4,614,820, Cl. 544-126.000.
Zelitzki, Michael; and Josefsberg, Yekutiel, to Tadiran Ltd. Millimeter wave frequency synthesizer with automatic loop gain correction and sophisticated lock search systems. 4,614,917, Cl. 331-1.00A.
Zenith Electronics Corporation: *See*—
Kazimir, Palac, 4,614,892, Cl. 313-402.000.
Zenno, Yoshizumi, to Kabushiki Kaisha Kobe Seiko Sho. Heavy duty crane. 4,614,275, Cl. 212-198.000.
Zettier, Karl-Heinz; Bruning, Paul; Schmidt, Reinhard; and Hemfort, Heinrich, to Westfalia Separator AG. Centrifugal separator drum for the clarification and separation of liquids. 4,614,598, Cl. 210-781.000.
Zimmerman, Carle C., Jr.: *See*—
Schroeder, Donald E., Jr.; Plummer, Mark A.; and Zimmerman, Carle C., Jr., 4,614,623, Cl. 260-505.00R.
Zoberis, Walter B.: *See*—
Beckering, Jacobus J.; Lehnerd, Alvin P.; and Zoberis, Walter B., 4,614,859, Cl. 219-312.000.
Zolyomi, Gabor: *See*—
Lang, Tibor; Korosi, Jeno; Andrasi, Ferenc; Botka, Peter; Hamori, Tamas; Berzsenyi, Pal; Goldschmidt, Katalin; Zolyomi, Gabor; Elekes, Istvan; and Lang nee Rihmer, Zsuzsanna, 4,614,740, Cl. 514-221.000.
Zuckmeyer, Bruno: *See*—
Antoine, Claude; and Zuckmeyer, Bruno, 4,614,447, Cl. 384-616.000.
Zupancic, Joseph J.; and Swedo, Raymond J., to Allied Corporation. $NADH_2$ mimics as chiral pseudohydrogenases. 4,614,769, Cl. 525-327.100.
Zupancic, Joseph J.; and Swedo, Raymond J., to Allied Corporation. NADHCN mimics as chiral pseudocyanotransferases. 4,614,770, Cl. 525-327.100.
Zverev, Anatoly I. Device for proportioning and feeding powder into barrel of detonation unit. 4,614,301, Cl. 239-79.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF SEPTEMBER, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., to Xerox Corporation. Interactive user-machine interface method and apparatus for copier/duplicator. Re. 32,253, Cl. 355-14.00C.

Bebb, Herbert B.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., Re. 32,253, Cl. 355-14.00C.

Brock, Gregory C.: *See*—
Daws, John W.; and Brock, Gregory C., Re. 32,254, Cl. 425-393.000.

Ciuffini, Anthony J.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., Re. 32,253, Cl. 355-14.00C.

Daws, John W.; and Brock, Gregory C., to Owens-Corning Fiberglas Corporation. Compressible material folding shoe. Re. 32,254, Cl. 425-393.000.

Dunn, Richard P.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., Re. 32,253, Cl. 355-14.00C.

Gagliani, John; and Long, John V. Modified polyimide foams and methods of making same. Re. 32,255, Cl. 521-56.000.

Gagliani, John; and Long, John V. Modified polyimide foams and methods of making same. Re. 32,256, Cl. 521-180.000.

Long, John V.: *See*—
Gagliani, John; and Long, John V., Re. 32,255, Cl. 521-56.000.
Gagliani, John; and Long, John V., Re. 32,256, Cl. 521-180.000.

Mosing, Lionel W.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., Re. 32,253, Cl. 355-14.00C.

Owens-Corning Fiberglas Corporation: *See*—
Daws, John W.; and Brock, Gregory C., Re. 32,254, Cl. 425-393.000.

Smura, Edwin J.: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., Re. 32,253, Cl. 355-14.00C.

Xerox Corporation: *See*—
Bartulis, Michael V.; Smura, Edwin J.; Dunn, Richard P.; Bebb, Herbert B.; Ciuffini, Anthony J.; and Mosing, Lionel W., Re. 32,253, Cl. 355-14.00C.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Beckman Instruments, Inc.: *See*—
Monte, Charles S.; and Johnson, Wayne S., B1 4,314,897, Cl. 204-299.00R.

Gruber, Gerald W., to PPG Industries, Inc. Photocatalyst system and ultraviolet light curable coating compositions containing the same. B1 4,017,652, 9-30-86, Cl. 427-54.100.

Johnson, Wayne S.: *See*—
Monte, Charles S.; and Johnson, Wayne S., B1 4,314,897, Cl. 204-299.00R.

Monte, Charles S.; and Johnson, Wayne S., to Beckman Instruments, Inc. Electrophoretic gel container. B1 4,314,897, 9-30-86, Cl. 204-299.00R.

PPG Industries, Inc.: *See*—
Gruber, Gerald W., B1 4,017,652, Cl. 427-54.100.

LIST OF DESIGN PATENTEES

Aihara, Akira; and Miyakawa, Akira, to Canon Kabushiki Kaisha. Display apparatus for electronic calculator. 285,935, 9-30-86, Cl. D18-12.000.

Airway Industries, Inc.: *See*—
Davis, Michael; and Wilhoit, William H., 285,863, Cl. D3-48.000.
Davis, Michael; and Wilhoit, William H., 285,868, Cl. D3-71.000.

Aktiebolaget Hassle: *See*—
Holmstedt, Leif, 285,904, Cl. D9-370.000.

American Commercial, Incorporated: *See*—
Everhan, Walter, 285,888, Cl. D7-30.000.
Laslo, Larry R., 285,889, Cl. D7-137.000.

American Greetings Corporation: *See*—
Toth, Stephen M., 285,946, Cl. D21-63.000.

Ampex Corporation: *See*—
Wilson, George A.; and McKinnon, Raymond J., *Jr.*, 285,924, Cl. D14-100.000.

Anderson, Carl; and Craig, Richard H., to General Battery Corporation. Battery grid. 285,917, 9-30-86, Cl. D13-10.000.

Anderson, Carl; and Craig, Richard H., to General Battery Corporation. Battery grid. 285,918, 9-30-86, Cl. D13-10.000.

Andoh, Takaharu: *See*—
Takahashi, Tsuneo; Andoh, Takaharu; and Washizuka, Keiichi, 285,923, Cl. D14-100.000.

Arigaya, Fujio, to Takara Co., Ltd. Toy vehicle chassis. 285,950, 9-30-86, Cl. D21-141.000.

Artemide S.p.A.: *See*—
De Pas, Gionatan; D'Urbino, Donato; and Lomazzi, Paolo, 285,977, Cl. D26-90.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Luthe, Claus; and Braun, Hans, 285,915, Cl. D12-192.000.
Walter, Hubert, 285,916, Cl. D12-211.000.

Beecham Inc.: *See*—
Pritchard, Robert W., 285,970, Cl. D24-60.000.

Beese, Hedda, to International Standard Electric Corporation. Telephone set. 285,921, 9-30-86, Cl. D14-53.000.

Blumenthal, Martin. Riding toy vehicle. 285,947, 9-30-86, Cl. D21-76.000.

Bohman, Jan L.; and Milling, Gunnar S., to Nordfor Teknik Aktiebolag. Templet for filing a saw chain. 285,899, 9-30-86, Cl. D8-90.000.

Booker, Brian A. J.; Jung, Harley A.; and Sonstag, Clemens A., to Parker Pen Company, The. Push button ball point pen. 285,936, 9-30-86, Cl. D19-51.000.

Booker, Brian A. J.; Jung, Harley A.; and Sonstag, Clemens A., to Parker Pen Company, The. Push button mechanical pencil. 285,937, 9-30-86, Cl. D19-51.000.

Braun, Hans: *See*—
Luthe, Claus; and Braun, Hans, 285,915, Cl. D12-192.000.

Brayak, Edward. Putter head. 285,955, 9-30-86, Cl. D21-217.000.

Brown Jordan Company: *See*—
Criqui, Eugene A., 285,873, Cl. D6-361.000.

Canon Kabushiki Kaisha: *See*—
Aihara, Akira; and Miyakawa, Akira, 285,935, Cl. D18-12.000.
Ikuta, Tamao; and Omino, Seiichi, 285,870, Cl. D3-73.000.
Yoshioka, Eiichi; and Suwa, Kazame, 285,933, Cl. D18-7.000.
Yoshioka, Eiichi; and Suwa, Kazame, 285,934, Cl. D18-7.000.
Car Mate Mfg. Co. Ltd.: *See*—
Sakai, Kazumi, 285,864, Cl. D3-61.000.
Cardinal Industries, Inc.: *See*—
Marty, Keith E., 285,971, Cl. D25-22.000.
Carl Manufacturing Co., Ltd.: *See*—
Mori, Chuzo, 285,939, Cl. D19-76.000.
Chambers, Richard F. Asphalt plant control house. 285,913, 9-30-86, Cl. D12-103.000.
Chambers, Richard F. Asphalt plant control house. 285,972, 9-30-86, Cl. D25-33.000.
Chan, Hing W., to Hing Wah Houseware Manufactory Limited. Multi-functional tool. 285,900, 9-30-86, Cl. D8-105.000.
Cheng, C. T., to Rong Kuang Machinery Co. Ltd. Light grinding machine. 285,929, 9-30-86, Cl. D15-124.000.
Colight, Inc.: *See*—
May, Joe T.; and Hale, Steven D., 285,931, Cl. D16-39.000.
Consolidated Devices, Inc.: *See*—
Grabovac, Bosko, 285,896, Cl. D8-24.000.
Convergent Technologies, Inc.: *See*—
Freige, Diab E.; Keely, Leroy B.; and Nuttall, Michael J., 285,922, Cl. D14-100.000.
Courtman, Murray G., to Development Finance Corporation of New Zealand, The. Bottle or the like. 285,903, 9-30-86, Cl. D9-341.000.
Cox, John P. A., to P.C. Cox (Newbury) Limited. Mastic gun. 285,895, 9-30-86, Cl. D8-14.100.
Craig, Richard H.: *See*—
Anderson, Carl; and Craig, Richard H., 285,917, Cl. D13-10.000.
Anderson, Carl; and Craig, Richard H., 285,918, Cl. D13-10.000.
Creative S.r.l.: *See*—
Mazzoleni, Giuseppe, 285,948, Cl. D21-108.000.
Criqui, Eugene A., to Brown Jordan Company. Chaise. 285,873, 9-30-86, Cl. D6-361.000.
CTI International, Inc.: *See*—
Morgan, Paul E., 285,963, Cl. D23-151.000.
Cusenza, Anthony P.; and Riddell, William J. Rack to support grocery bags or the like. 285,885, 9-30-86, Cl. D6-512.000.
Davis, Michael; and Wilhoit, William H., to Airway Industries, Inc. Luggage case. 285,863, 9-30-86, Cl. D3-48.000.
Davis, Michael; and Wilhoit, William H., to Airway Industries, Inc. Luggage case. 285,868, 9-30-86, Cl. D3-71.000.
Davis, Myron F., to International Business Machines Corporation. Printer. 285,925, 9-30-86, Cl. D14-111.000.
De Pas, Gionatan; D'Urbino, Donato; and Lomazzi, Paolo, to Artemide S.p.A. Swinging lamp. 285,977, 9-30-86, Cl. D26-90.000.
Development Finance Corporation of New Zealand, The: *See*—
Courtman, Murray G., 285,903, Cl. D9-341.000.
Dokoupil, James R.: *See*—
Mt. Pleasant, Gregory G.; and Dokoupil, James R., 285,881, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; and Dokoupil, James R., 285,882, Cl. D6-461.000.
Doyel, John S. Mixer-pourer for drinks. 285,892, 9-30-86, Cl. D7-376.000.
D'Urbino, Donato: *See*—
De Pas, Gionatan; D'Urbino, Donato; and Lomazzi, Paolo, 285,977, Cl. D26-90.000.
Electronic Instrumentation & Technology: *See*—
May, Joe T.; and Hale, Steven D., 285,931, Cl. D16-39.000.
Engelbrecht, Horst P.; and White, Edwin R., to General Signal Corp. Mixer. 285,928, 9-30-86, Cl. D15-122.000.
Eavall, Bjorn E. A., to Saab-Scania Aktiebolag. Head light for an automobile. 285,973, 9-30-86, Cl. D26-28.000.
Everhan, Walter, to American Commercial, Incorporated. Saucer. 285,888, 9-30-86, Cl. D7-30.000.
Fibrecast (UK) Limited: *See*—
Thornalley, Michael J., 285,957, Cl. D21-247.000.
Figueroa, Paul A. Sun bathing spray apparatus. 285,959, 9-30-86, Cl. D23-6.000.
Finkel Outdoor Products, Inc.: *See*—
Levy, Edward D., 285,862, Cl. D3-10.000.
Tegze, Joseph F., 285,883, Cl. D6-495.000.
Foster Industries Company Limited: *See*—
Leung, Chung S., 285,974, Cl. D26-42.000.
Freige, Diab E.; Keely, Leroy B.; and Nuttall, Michael J., to Convergent Technologies, Inc. Keyboard. 285,922, 9-30-86, Cl. D14-100.000.
Friend, Terence M.: *See*—
Nichols, Peter G.; Tedd, David C.; Friend, Terence M.; and Steggall, Christopher L., 285,910, Cl. D10-79.000.
Fuchs, Sheldon. Suitcase. 285,879, 9-30-86, Cl. D3-71.000.
Fuidio, Raimundo P., to Productos Bufalo, S.A. Bottle. 285,902, 9-30-86, Cl. D9-319.000.
Fukuda, Harumi: *See*—
Nishibori, Hiroshi; and Fukuda, Harumi, 285,965, Cl. D24-21.000.
Gamble, William L., to W. E. Bassett Company, The. Combined pocket tool case and key holder. 285,865, 9-30-86, Cl. D3-64.000.
Gamble, William L., to W. E. Bassett Company, The. Combined pocket tool case and key holder. 285,866, 9-30-86, Cl. D3-64.000.
Gaylord Bros., Inc.: *See*—
Mt. Pleasant, Gregory G.; and Dokoupil, James R., 285,881, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; and Dokoupil, James R., 285,882, Cl. D6-461.000.
General Battery Corporation: *See*—
Anderson, Carl; and Craig, Richard H., 285,917, Cl. D13-10.000.
Anderson, Carl; and Craig, Richard H., 285,918, Cl. D13-10.000.
General Signal Corp.: *See*—
Engelbrecht, Horst P.; and White, Edwin R., 285,928, Cl. D15-122.000.
Gerber Products Company: *See*—
Wise, Robert D.; and Quinlan, Robert L., 285,884, Cl. D6-509.000.
Giles, George B.; and Ross, Donald B., to Giles Tool Agencies Limited. Aerosol torch. 285,897, 9-30-86, Cl. D8-30.000.
Giles Tool Agencies Limited: *See*—
Giles, George B.; and Ross, Donald B., 285,897, Cl. D8-30.000.
Goldman, Paul R., to Plycraft Inc. Adjustable armchair. 285,875, 9-30-86, Cl. D6-367.000.
Goldman, Paul R., to Plycraft Inc. Adjustable armchair. 285,876, 9-30-86, Cl. D6-367.000.
Goldman, Paul R., to Plycraft Inc. Adjustable armchair. 285,877, 9-30-86, Cl. D6-373.000.
Goldman, Paul R., to Plycraft Inc. Adjustable armchair. 285,878, 9-30-86, Cl. D6-367.000.
Grabovac, Bosko, to Consolidated Devices, Inc. Force readout unit for torque wrenches. 285,896, 9-30-86, Cl. D8-24.000.
Griesenbeck, Harrell. Bed tent. 285,880, 9-30-86, Cl. D6-383.000.
Gustafson, Tore L., to Monark AB. Exercise bicycle. 285,953, 9-30-86, Cl. D21-194.000.
Gustavsson, Jack. Combination reel and hose unit. 285,901, 9-30-86, Cl. D8-358.000.
Hale, Steven D.: *See*—
May, Joe T.; and Hale, Steven D., 285,931, Cl. D16-39.000.
Harada, Toshio: *See*—
Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, 285,893, Cl. D7-405.000.
Hasegawa, Noriyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Head for golf club. 285,954, 9-30-86, Cl. D21-214.000.
Hayashi, Yoshiaki, to Roland Corporation. Electric guitar. 285,932, 9-30-86, Cl. D17-15.000.
Hestair Kiddicraft Limited: *See*—
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,949, Cl. D21-134.000.
Hing Wah Houseware Manufactory Limited: *See*—
Chan, Hing W., 285,900, Cl. D8-105.000.
Hitachi, Ltd.: *See*—
Koizumi, Hiroshi; Takayama, Hideki; Kaji, Hikaru; and Tanabe, Masatoshi, 285,958, Cl. D23-4.000.
Holland, Joseph A. Key ring. 285,867, 9-30-86, Cl. D3-65.000.
Holmstedt, Leif, to Aktiebolaget Hassle. Bottle for fluid medicines. 285,904, 9-30-86, Cl. D9-370.000.
Ichihara, Masuo: *See*—
Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, 285,893, Cl. D7-405.000.
Ikuta, Tamao; and Omino, Seiichi, to Canon Kabushiki Kaisha. Typewriter case. 285,870, 9-30-86, Cl. D3-73.000.
International Business Machines Corporation: *See*—
Davis, Myron F., 285,925, Cl. D14-111.000.
International Standard Electric Corporation: *See*—
Berse, Hedda, 285,921, Cl. D14-53.000.
Jack, Alister, to U.S. Philips Corporation. Espresso coffee maker. 285,890, 9-30-86, Cl. D7-309.000.
Jackson, Rachel C. Walking staff. 285,861, 9-30-86, Cl. D3-7.000.
James, Lorena S. Gift tag. 285,940, 9-30-86, Cl. D20-77.000.
Joffee, Daniel I. Stick figure. 285,912, 9-30-86, Cl. D11-160.000.
John Manufacturing Limited: *See*—
Yuen, John S., 285,911, Cl. D10-114.000.
Yuen, John S., 285,976, Cl. D26-48.000.
Johnson, Edward M. Combined bag closure and handle. 285,907, 9-30-86, Cl. D9-443.000.
Jung, Harley A.: *See*—
Booker, Brian A. J.; Jung, Harley A.; and Sonntag, Clemens A., 285,936, Cl. D19-51.000.
Booker, Brian A. J.; Jung, Harley A.; and Sonntag, Clemens A., 285,937, Cl. D19-51.000.
Kaji, Hikaru: *See*—
Koizumi, Hiroshi; Takayama, Hideki; Kaji, Hikaru; and Tanabe, Masatoshi, 285,958, Cl. D23-4.000.
Kanamaru, Yutaka: *See*—
Kawakami, Hideki; and Kanamaru, Yutaka, 285,894, Cl. D8-8.000.
Kawaichi, Masayoshi: *See*—
Miyake, Takao; and Kawaichi, Masayoshi, 285,891, Cl. D7-351.000.
Kawakami, Hideki; and Kanamaru, Yutaka, to Ryobi Ltd. Hedge trimmer. 285,894, 9-30-86, Cl. D8-8.000.
Keely, Leroy B.: *See*—
Freige, Diab E.; Keely, Leroy B.; and Nuttall, Michael J., 285,922, Cl. D14-100.000.
Kemmeter, Michael. Football dart board. 285,942, 9-30-86, Cl. D21-6.000.
Keske, David. Urethane foam gun. 285,960, 9-30-86, Cl. D23-17.000.
Kies, Henry J.; and Loris, William P., to Rockwell International Corp. Housing for interface module. 285,926, 9-30-86, Cl. D14-114.000.
Kinnett, James G. Glenoid prosthesis component for total shoulder prosthesis system. 285,968, 9-30-86, Cl. D24-33.000.
Kinnett, James G. Acromial prosthesis component for total shoulder prosthesis system. 285,969, 9-30-86, Cl. D24-33.000.
Kitakaze, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Television tuner for a video tape recorder. 285,920, 9-30-86, Cl. D14-10.000.

Koeneman, Robert M.; and Schafer, Albert L., to Remcor Products Company. Ice dispenser. 285,927, 9-30-86, Cl. D15-80.000.
Koizumi, Hiroshi; Takayama, Hideki; Kaji, Hikaru; and Tanabe, Masatoshi, to Hitachi, Ltd. Water filter. 285,958, 9-30-86, Cl. D23-4.000.
Lamson, Robert D., to Spencer Products, Inc. Tape measure with brake. 285,909, 9-30-86, Cl. D10-72.000.
LaRue, Marvel M.; and Likness, Dawn M. Paper towel holder. 285,886, 9-30-86, Cl. D6-522.000.
Lasio, Larry R., to American Commercial, Incorporated. Spoon. 285,889, 9-30-86, Cl. D7-137.000.
Leung, Chung S., to Foster Industries Company Limited. Combined fluorescent and incandescent lantern. 285,974, 9-30-86, Cl. D26-42.000.
Lever Brothers Company: *See—*
Tyler, Frank S., 285,906, Cl. D9-425.000.
Levy, Edward D.. to Finkel Outdoor Products, Inc. Umbrella gear housing. 285,862, 9-30-86, Cl. D3-10.000.
Likness, Dawn M.: *See—*
LaRue, Marvel M.; and Likness, Dawn M., 285,886, Cl. D6-522.000.
Lomazzi, Paolo: *See—*
De Pas, Gionatan; D'Urbino, Donato; and Lomazzi, Paolo, 285,977, Cl. D26-90.000.
Lonczak, John: *See—*
Stowell, Davin; Viemeister, Tucker; and Lonczak, John, 285,898, Cl. D8-36.000.
Loris, William P.: *See—*
Kies, Henry J.; and Loris, William P., 285,926, Cl. D14-114.000.
Luthe, Claus; and Braun, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Combined vehicle dashboard and console unit. 285,915, 9-30-86, Cl. D12-192.000.
Ma, Lai K., to Sonca Industries Limited. Combined lantern, flashlight and warning lamp. 285,975, 9-30-86, Cl. D26-42.000.
Maron, Jeffrey. Wrist watch. 285,908, 9-30-86, Cl. D10-30.000.
Marty, Keith E., to Cardinal Industries, Inc. Modular residential building. 285,971, 9-30-86, Cl. D25-22.000.
Massonnet, Henry. Tripod stool. 285,872, 9-30-86, Cl. D6-352.000.
Matsushita Electric Industrial Co.: *See—*
Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, 285,893, Cl. D7-405.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Kitakaze, Yoshinobu, 285,920, Cl. D14-10.000.
May, Joe T.; and Hale, Steven D., to Colight, Inc.; and Electronic Instrumentation & Technology. Integrating photometer. 285,931, 9-30-86, Cl. D16-39.000.
Mazzoleni, Giuseppe, to Creative S.r.l. Toy construction piece. 285,948, 9-30-86, Cl. D21-108.000.
McCaffrey, James A. Chair. 285,874, 9-30-86, Cl. D6-365.000.
McKinnon, Raymond J., Jr.: *See—*
Wilson, George A.; and McKinnon, Raymond J., Jr., 285,924, Cl. D14-100.000.
Milling, Gunnar S.: *See—*
Bohman, Jan L.; and Milling, Gunnar S., 285,899, Cl. D8-90.000.
Mr. Gasket Company: *See—*
Segal, William J., 285,905, Cl. D9-415.000.
Miyakawa, Akira: *See—*
Aihara, Akira; and Miyakawa, Akira, 285,935, Cl. D18-12.000.
Miyake, Takao; and Kawaichi, Masayoshi, to Sharp Corporation. Microwave oven. 285,891, 9-30-86, Cl. D7-351.000.
Miyazaki, Mararu: *See—*
Satoh, Teizoh; and Miyazaki, Mararu, 285,979, Cl. D28-50.000.
Mizuma, Kensuke; Ichihara, Masuo; and Harada, Toshio, to Matsushita Electric Industrial Co. Front panel for a microwave oven. 285,893, 9-30-86, Cl. D7-405.000.
Monark AB: *See—*
Gustafsson, Tore L., 285,953, Cl. D21-194.000.
Morgan, Billy A. Doll clown head and body. 285,952, 9-30-86, Cl. D21-173.000.
Morgan, Paul E., to CTI International, Inc. Ventilator for a freight container. 285,963, 9-30-86, Cl. D23-151.000.
Mori, Chuzo, to Carl Manufacturing Co., Ltd. Telephone index or the like. 285,939, 9-30-86, Cl. D19-76.000.
Mt. Pleasant, Gregory G.; and Dokoupil, James R., to Gaylord Bros., Inc. Cassette display rack. 285,881, 9-30-86, Cl. D6-461.000.
Mt. Pleasant, Gregory G.; and Dokoupil, James R., to Gaylord Bros., Inc. Cassette display rack. 285,882, 9-30-86, Cl. D6-461.000.
Muller, Hans F. Sausage. 285,860, 9-30-86, Cl. D1-106.000.
Murphy, William J., to Saginaw Automation & Machine, Inc. Surgical leg clamp. 285,967, 9-30-86, Cl. D24-27.000.
Nichols, Peter G.; Tedd, David C.; Friend, Terence M.; and Steggall, Christopher L., to Thorn EMI Instruments Limited. Electrical measuring instrument. 285,910, 9-30-86, Cl. D10-79.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hasegawa, Noriyoshi, 285,954, Cl. D21-214.000.
Nishibori, Hiroshi; and Fukuda, Harumi, to Sharp Corporation. Sphygmomanometer. 285,965, 9-30-86, Cl. D24-21.000.
Nordfor Teknik Aktiebolag: *See—*
Bohman, Jan L.; and Milling, Gunnar S., 285,899, Cl. D8-90.000.
Nuttall, Michael J.: *See—*
Freige, Diab E.; Keely, Leroy B.; and Nuttall, Michael J., 285,922, Cl. D14-100.000.
O'Donnell, Columbus. Game board. 285,944, 9-30-86, Cl. D21-16.000.
Olovsson, Gunnar. Grinding wheel for a grinding machine. 285,930, 9-30-86, Cl. D15-126.000.
Omino, Seiichi: *See—*
Ikuta, Tamao; and Omino, Seiichi, 285,870, Cl. D3-73.000.
P.C. Cox (Newbury) Limited: *See—*
Cox, John P. A., 285,895, Cl. D8-14.100.
Palka, James J. Medicine cabinet. 285,887, 9-30-86, Cl. D6-559.000.
Pape, John A.: *See—*
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,949, Cl. D21-134.000.
Parker Pen Company, The: *See—*
Booker, Brian A. J.; Jung, Harley A.; and Sonntag, Clemens A., 285,936, Cl. D19-51.000.
Booker, Brian A. J.; Jung, Harley A.; and Sonntag, Clemens A., 285,937, Cl. D19-51.000.
Pennell, David J. Room deodorizer dispenser. 285,961, 9-30-86, Cl. D23-150.000.
Pentad Corporation: *See—*
Stagg, George A., Jr., 285,945, Cl. D21-37.000.
Plycraft Inc.: *See—*
Goldman, Paul R., 285,875, Cl. D6-367.000.
Goldman, Paul R., 285,876, Cl. D6-367.000.
Goldman, Paul R., 285,877, Cl. D6-373.000.
Goldman, Paul R., 285,878, Cl. D6-367.000.
Porter, John F. Pill crusher. 285,966, 9-30-86, Cl. D24-23.000.
Pritchard, Robert W., to Beecham Inc. Flip-up douche bottle. 285,970, 9-30-86, Cl. D24-60.000.
Productos Bufalo, S.A.: *See—*
Fuidio, Raimundo P., 285,902, Cl. D9-319.000.
Quinlan, Robert L.: *See—*
Wise, Robert D.; and Quinlan, Robert L., 285,884, Cl. D6-509.000.
Raffo, David M.: *See—*
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,949, Cl. D21-134.000.
Raymo, Sarah L. Stuffed toy bear. 285,951, 9-30-86, Cl. D21-159.000.
Remcor Products Company: *See—*
Koeneman, Robert M.; and Schafer, Albert L., 285,927, Cl. D15-80.000.
Rice, Lois. Lamp. 285,978, 9-30-86, Cl. D26-107.000.
Riddell, William J.: *See—*
Cusenza, Anthony P.; and Riddell, William J., 285,885, Cl. D6-512.000.
Rockwell International Corp.: *See—*
Kies, Henry J.; and Loris, William P., 285,926, Cl. D14-114.000.
Roland Corporation: *See—*
Hayashi, Yoshiaki, 285,932, Cl. D17-15.000.
Ronen, Amir. Garment bag. 285,869, 9-30-86, Cl. D3-71.000.
Rong Kuang Machinery Co. Ltd.: *See—*
Cheng, C. T., 285,929, Cl. D15-124.000.
Ross, Donald B.: *See—*
Giles, George B.; and Ross, Donald B., 285,897, Cl. D8-30.000.
Ryobi Ltd.: *See—*
Kawakami, Hideki; and Kanamaru, Yutaka, 285,894, Cl. D8-8.000.
Saab-Scania Aktiebolag: *See—*
Envall, Bjorn E. A., 285,973, Cl. D26-28.000.
Sadleir, James W. Shuffleboard game table top. 285,943, 9-30-86, Cl. D21-11.000.
Saginaw Automation & Machine, Inc.: *See—*
Murphy, William J., 285,967, Cl. D24-27.000.
Sakai, Kazumi, to Car Mate Mfg. Co. Ltd. Key holder. 285,864, 9-30-86, Cl. D3-61.000.
Sanyei Corporation: *See—*
Stowell, Davin; Viemeister, Tucker; and Lonczak, John, 285,898, Cl. D8-36.000.
Satoh, Teizoh; and Miyazaki, Mararu, to U.S. Philips Corporation. Dry shaver. 285,979, 9-30-86, Cl. D28-50.000.
Schafer, Albert L.: *See—*
Koeneman, Robert M.; and Schafer, Albert L., 285,927, Cl. D15-80.000.
Segal, William J., to Mr. Gasket Company. Packaging container. 285,905, 9-30-86, Cl. D9-415.000.
Sharp Corporation: *See—*
Miyake, Takao; and Kawaichi, Masayoshi, 285,891, Cl. D7-351.000.
Nishibori, Hiroshi; and Fukuda, Harumi, 285,965, Cl. D24-21.000.
Shearer, William B. Golf club head. 285,956, 9-30-86, Cl. D21-220.000.
Sherrill, Jimmy L. Insulator or similar article. 285,919, 9-30-86, Cl. D13-18.000.
Sonca Industries Limited: *See—*
Ma, Lai K., 285,975, Cl. D26-42.000.
Sonntag, Clemens A.: *See—*
Booker, Brian A. J.; Jung, Harley A.; and Sonntag, Clemens A., 285,936, Cl. D19-51.000.
Booker, Brian A. J.; Jung, Harley A.; and Sonntag, Clemens A., 285,937, Cl. D19-51.000.
Spencer Products, Inc.: *See—*
Lamson, Robert D., 285,909, Cl. D10-72.000.
Stagg, George A., Jr., to Pentad Corporation. Housing for randomly selecting numbers. 285,945, 9-30-86, Cl. D21-37.000.
Steggall, Christopher L.: *See—*
Nichols, Peter G.; Tedd, David C.; Friend, Terence M.; and Steggall, Christopher L., 285,910, Cl. D10-79.000.
Stenwall, Lauri A. Convertible storage cart and lounge seat for use primarily on a beach. 285,871, 9-30-86, Cl. D6-336.000.
Stowell, Davin; Viemeister, Tucker; and Lonczak, John, to Sanyei Corporation. Electric hand-held can opener. 285,898, 9-30-86, Cl. D8-36.000.
Suwa, Kaname: *See—*
Yoshioka, Eiichi; and Suwa, Kaname, 285,933, Cl. D18-7.000.

Yoshioka, Eiichi; and Suwa, Kaname, 285,934, Cl. D18-7.000.
Takahashi, Tsuneo; Andoh, Takaharu; and Washizuka, Keiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Arithmetic operation control machine for electronic computers. 285,923, 9-30-86, Cl. D14-100.000.
Takara Co., Ltd.: *See—*
Arigaya, Fujio, 285,950, Cl. D21-141.000.
Takayama, Hideki: *See—*
Koizumi, Hiroshi; Takayama, Hideki; Kaji, Hikaru; and Tanabe, Masatoshi, 285,958, Cl. D23-4.000.
Tanabe, Masatoshi: *See—*
Koizumi, Hiroshi; Takayama, Hideki; Kaji, Hikaru; and Tanabe, Masatoshi, 285,958, Cl. D23-4.000.
Tedd, David C.: *See—*
Nichols, Peter G.; Tedd, David C.; Friend, Terence M.; and Steggall, Christopher L., 285,910, Cl. D10-79.000.
Tegze, Joseph F., to Finkel Outdoor Products, Inc. Umbrella base. 285,883, 9-30-86, Cl. D6-495.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., to Hestair Kiddicraft Limited. Toy cart. 285,949, 9-30-86, Cl. D21-134.000.
Thorn EMI Instruments Limited: *See—*
Nichols, Peter G.; Tedd, David C.; Friend, Terence M.; and Steggall, Christopher L., 285,910, Cl. D10-79.000.
Thornalley, Michael J., to Fibrecast (UK) Limited. Passenger seat for an amusement ride. 285,957, 9-30-86, Cl. D21-247.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Takahashi, Tsuneo; Andoh, Takaharu; and Washizuka, Keiichi, 285,923, Cl. D14-100.000.
Toth, Stephen M., to American Greetings Corporation. Toy mobile. 285,946, 9-30-86, Cl. D21-63.000.
Tyler, Frank S., to Lever Brothers Company. Combined packaging container and lid. 285,906, 9-30-86, Cl. D9-425.000.
U.S. Philips Corporation: *See—*
Jack, Alister, 285,890, Cl. D7-309.000.
Satoh, Teizoh; and Miyazaki, Mararu, 285,979, Cl. D28-50.000.
Ventres, Daniel B., Jr. Window file card. 285,938, 9-30-86, Cl. D19-1.000.
Viemeister, Tucker: *See—*
Stowell, Davin; Viemeister, Tucker; and Lonczak, John, 285,898, Cl. D8-36.000.
Vitaloni, Alberto, to Vitaloni S.p.A. Rear view mirror. 285,914, 9-30-86, Cl. D12-189.000.
Vitaloni S.p.A.: *See—*
Vitaloni, Alberto, 285,914, Cl. D12-189.000.
W. E. Bassett Company, The: *See—*
Gamble, William L., 285,865, Cl. D3-64.000.
Gamble, William L., 285,866, Cl. D3-64.000.
Walter, Hubert, to Bayerische Motoren Werke Aktiengesellschaft. Wheel. 285,916, 9-30-86, Cl. D12-211.000.
Washizuka, Keiichi: *See—*
Takahashi, Tsuneo; Andoh, Takaharu; and Washizuka, Keiichi, 285,923, Cl. D14-100.000.
White, Edwin R.: *See—*
Engelbrecht, Horst P.; and White, Edwin R., 285,928, Cl. D15-122.000.
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ISSUED SEPTEMBER 30, 1986

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

23 4,613,991
144 4,613,992
411 4,613,993

CLASS 4

480 4,613,994
634 4,613,995

CLASS 5

2 R 4,613,996
62 4,613,997
136 4,613,998
400 4,613,999
484 4,614,000

CLASS 7

137 4,614,001

CLASS 8

4,614,519
436 4,614,520
471 4,614,521

CLASS 15

53 A 4,614,002
339 4,614,003

CLASS 16

82 4,614,004

CLASS 17

34 4,614,005
71 4,614,006

CLASS 24

136 K 4,614,007
501 4,614,008
639 4,614,010

CLASS 26

73 4,614,011

CLASS 29

33 J 4,614,018
33 K 4,614,012
155 R 4,614,013
157.1 R 4,614,014
239 4,614,015
243.53 4,614,017
412 4,614,016
450 4,614,019
568 4,614,020
590 4,614,021
596 4,614,022
598 4,614,023
612 4,614,024
623.1 4,614,025
623.3 4,614,026
707 4,614,027
749 4,614,028
882 4,614,029
885 4,614,030

CLASS 30

28 4,614,031
31 4,614,032
120.2 4,614,033
120.3 4,614,034
124 4,614,035
200 4,61 ,036
392 4,614,037

CLASS 33

149 J 4,614,038
241 4,614,039
312 4,614,040
313 4,614,041
494 4,614,042
529 4,614,043

CLASS 34

25 4,614,044
34 4,614,045

CLASS 36

30 R 4,614,046
50 4,614,047

CLASS 37

280 4,614,048

CLASS 38

102.91 4,614,049

CLASS 40

347 DA 4,614,934

CLASS 42

1.01 4,614,050
12 4,614,051
87 4,614,052
89 4,614,053

CLASS 43

43.2 4,614,054

CLASS 44

63 4,614,522

CLASS 47

2 4,614,055
67 4,614,056

CLASS 48

76 4,614,523

CLASS 49

29 4,614,057
56 4,614,058
118 4,614,059
303 4,614,060
440 4,614,061
504 4,614,062

CLASS 51

174 4,614,063
420 4,614,064

CLASS 52

20 4,614,065
134 4,614,066
211 4,614,068
235 4,614,067
4,614,069
296 4,614,070
309.12 4,614,071
484 4,614,072

CLASS 53

54 4,614,073
128 4,614,074
168 4,614,075
433 4,614,076
490 4,614,077
551 4,614,078
563 4,614,079

CLASS 55

16 4,614,524
25 4,614,525
130 4,614,526
170 4,614,527
387 4,614,528
520 4,614,529

CLASS 56

16.6 4,614,080

CLASS 57

12 4,614,081

CLASS 60

39.32 4,614,082
39.53 4,614,083
325 4,614,084
370 4,614,085
624 4,614,086

CLASS 62

55.5 4,614,093
126 4,614,087
137 4,614,088
158 4,614,089
4,614,090
384 4,614,091
408 4,614,092

CLASS 65

30.11 4,614,530
158 4,614,531

CLASS 66

170 4,614,094
207 4,614,095

CLASS 68

22 R 4,614,096

CLASS 70

34 4,614,097

CLASS 71

92 4,614,532
4,614,533
4,614,534
4,614,535
94 4,614,536
4,614,537
121 4,614,538

CLASS 72

8 4,614,098
29 4,614,099
53 4,614,100
160 4,614,101
178 4,614,102
242 4,614,103
347 4,614,104
382 4,614,105
384 4,614,106
402 4,614,107
446 4,614,108

CLASS 73

38 4,614,109
84 4,614,110
119 A 4,614,111
178 R 4,614,112
201 4,614,113
313 4,614,114
599 4,614,115
657 4,614,116
659 4,614,117
701 4,614,118
704 4,614,119
761 4,614,120
861.12 4,614,121
861.74 4,614,122

CLASS 74

87 4,614,123
89 4,614,124
200 4,614,125
333 4,614,126
422 4,614,127
424.8 B 4,614,128
477 4,614,129
501 4,614,009
501 R 4,614,130
720.5 4,614,131
4,614,132
740 4,614,133
768 4,614,134

CLASS 75

3 4,614,539
59.13 4,614,540
74 4,614,541
76 4,614,542
101 R 4,614,543
246 4,614,544

CLASS 81

9.51 4,614,135

CLASS 82

44 4,614,136
205 4,614,137

CLASS 83

51 4,614,138
300 4,614,139
397 4,614,140
402 4,614,141
496 4,614,142
622 4,614,143

CLASS 84

1.28 4,614,144
345 4,614,145

CLASS 86

20 C 4,614,146

CLASS 87

5 4,614,147

CLASS 91

420 4,614,148

CLASS 92

98 D 4,614,149
221 4,614,150

CLASS 98

2 4,614,151
4,614,152

CLASS 99

511 4,614,153

CLASS 100

116 4,614,154

CLASS 101

248 4,614,155

CLASS 102

312 4,614,156
466 4,614,157

CLASS 104

172 S 4,614,158

CLASS 106

169 4,614,545
213 4,614,546
288 Q 4,614,547

CLASS 110

261 4,614,159

CLASS 111

96 4,614,160

CLASS 112

121.2 4,614,161

CLASS 118

19 4,614,162
268 4,614,163
323 4,614,164
657 4,614,165

CLASS 119

32 4,614,166

CLASS 122

4 D 4,614,167

CLASS 123

27 GE 4,614,168
54 P 4,614,169
90.11 4,614,170
90.44 4,614,171
188 S 4,614,172
216 4,614,173
478 4,614,174
571 4,614,175
4,614,184
668 4,614,185

CLASS 126

110 R 4,614,176
299 R 4,614,177

CLASS 127

40 4,614,548

CLASS 128

24 A 4,614,178
64 4,614,179
4,614,180
80 C 4,614,181
130 4,614,182
132 R 4,614,183
201.25 4,614,186
303 R 4,614,187
348.1 4,614,188
380 4,614,189
395 4,614,190
399 4,614,191
419 D 4,614,192
419 P 4,614,194
419 R 4,614,193
653 4,614,195
660 4,614,196

CLASS 130

27 R 4,614,197

CLASS 131

94 4,614,198
362 4,614,199

CLASS 132

7 4,614,200

CLASS 134

19 4,614,549

CLASS 136

250 4,614,835

CLASS 137

68.1 4,614,201
118 4,614,202
385 4,614,203
625.11 4,614,204
4,614,205

CLASS 138

93 4,614,206
96 T 4,614,207
103 4,614,208

CLASS 139

11 4,614,209
54 4,614,210
76 4,614,211
79 4,614,212

CLASS 141

59 4,614,213
288 4,614,214

CLASS 148

11.5 N 4,614,550
12 F 4,614,551
417 4,614,552

CLASS 152

527 4,614,215

CLASS 156

39 4,614,553
62.2 4,614,554
64 4,614,555
78 4,614,556
85 4,614,557
163 4,614,558
182 4,614,559
357 4,614,560
384 4,614,561
420 4,614,562
643 4,614,563
657 4,614,564

CLASS 162

206 4,614,565
301 4,614,566

CLASS 164

67.1 4,614,216
137 4,614,217
253 4,614,218
369 4,614,219
461 4,614,220
462 4,614,221
463 4,614,222
473 4,614,223
476 4,614,224
504 4,614,225

CLASS 165

76 4,614,226
80.4 4,614,227
89 4,614,228
115 4,614,229
151 4,614,230
153 4,614,231

CLASS 166

105.5 4,614,232
206 4,614,233
261 4,614,234
301 4,614,235
304 4,614,236

CLASS 169

12 4,614,237

CLASS 171

16 4,614,238

CLASS 172

21 4,614,239
799.5 4,614,240

CLASS 173

139 4,614,241

CLASS 174

51 4,614,836
68.5 4,614,837
70 C 4,614,838

CLASS 175

269 4,614,242

CLASS 177

25 4,614,243
58 4,614,244
210 FP 4,614,245

CLASS 179

2 E 4,614,839
7.1 R 4,614,840
18 ES 4,614,841
27 FH 4,614,842
81 R 4,614,843
159 4,614,845
175.1 R 4,614,844

CLASS 180

6.5 4,614,246
24.02 4,614,247
79.1 4,614,248
312 4,614,249

CLASS 181

102 4,614,250

CLASS 182

63 4,614,251
116 4,614,252

CLASS 187

9 E 4,614,253

CLASS 188

71.5 4,614,254
315 4,614,255

CLASS 192

0.052 4,614,258
4 A 4,614,256
8 C 4,614,257
70.11 4,614,259
105 CE 4,614,260
106.2 4,614,261

CLASS 193

23 4,614,262

CLASS 198

419 4,614,263
505 4,614,264
774 4,614,265

CLASS 200

5 E 4,614,846
6 A 4,614,847
61.85 4,614,848
81 R 4,614,849
144 B 4,614,850
146 R 4,614,851

CLASS 201

1 4,614,567

CLASS 204

29 4,614,568
67 4,614,569
129.65 4,614,570
129.75 4,614,571
157.95 4,614,572
176 4,614,573
196 4,614,574
265 4,614,575
299 R 4,614,576
B1 4,314,397
415 4,614,577

CLASS 206

216 4,614,266
221 4,614,267
304 4,614,268
387 4,614,269
389 4,614,270

CLASS 208

120 4,614,578

CLASS 209

18 4,614,579
459 4,614,580
694 4,614,271

CLASS 210

108 4,614,581
242.3 4,614,582
400 4,614,583
422 4,614,584
433.2 4,614,585
500.28 4,614,586
603 4,614,587
4,614,588
608 4,614,589
637 4,614,590
669 4,614,591
679 4,614,592
708 4,614,593
746 4,614,594
754 4,614,595
4,614,596
772 4,614,597
781 4,614,598

CLASS 211

163 4,614,272
183 4,614,273

CLASS 212

160 4,614,274
198 4,614,275

CLASS 215

364 4,614,276

CLASS 217

43 A 4,614,277

CLASS 219

10.49 R 4,614,852
10.51 4,614,853
69 C 4,614,854
98 4,614,855
130.21 4,614,856
136 4,614,857
230 4,614,858
312 4,614,859
492 4,614,860

CLASS 220

1.5 4,614,278
3 4,614,279
67 4,614,280
239 4,614,281
307 4,614,282

CLASS 221

278 4,614,283

CLASS 222

331 4,614,284
454 4,614,285
505 4,614,286

CLASS 226

74 4,614,287
165 4,614,288
181 4,614,289

CLASS 227

1 4,614,290
120 4,614,291

CLASS 228

1.1 4,614,292
17 4,614,293
37 4,614,294
53 4,614,295
194 4,614,296

CLASS 229

109 4,614,298
132 4,614,297

CLASS 235

380 4,614,861
382.5 4,614,862

CLASS 239

6 4,614,299
71 4,614,300
79 4,614,301
315 4,614,302
499 4,614,303

CLASS 241

28 4,614,304
36 4,614,305
37.5 4,614,306
101.4 4,614,307
154 4,614,308
163 4,614,309
259.2 4,614,310

CLASS 242

47.01 4,614,311
55.2 4,614,312
58.6 4,614,313
84.2 G 4,614,314
200 4,614,315

CLASS 244

1 R 4,614,316
3.19 4,614,317
3.21 4,614,318
172 4,614,319
216 4,614,320

CLASS 248

74.2 4,614,321
490 4,614,322
515 4,614,323

CLASS 249

11 4,614,324
120 4,614,325
180 4,614,326

CLASS 250

201 4,614,863
4,614,864
4,614,865
214 A 4,614,866
223 R 4,614,867
227 4,614,868
23: SE 4,614,869
358.1 4,614,870
372 4,614,871
396 R 4,614,872
551 4,614,873
560 4,614,874

CLASS 251

129.16 4,614,327
129.17 4,614,328
248 4,614,329
283 4,614,330

CLASS 252

8.512 4,614,599
8.551 4,614,601
8.553 4,614,600
33.3 4,614,602
51.5 A 4,614,603
56 S 4,614,604
69 4,614,605
116 4,614,606
142 4,614,607
299.64 4,614,608
299.66 4,614,609
522 R 4,614,610
4,614,611
541 4,614,612

CLASS 254

390 4,614,331
405 4,614,332

CLASS 260

380 4,614,618
397.2 4,614,619
397.25 4,614,620
397.45 4,614,621
410.7 4,614,622
505 R 4,614,623

CLASS 264

2.5 4,614,624
6 4,614,625
46.4 4,614,626
46.6 4,614,627
61 4,614,628
176.1 4,614,629
219 4,614,630
258 4,614,631
280 4,614,632
338 4,614,633
341 4,614,634

CLASS 267

61 S 4,614,333

CLASS 271

8.1 4,614,334
112 4,614,335

CLASS 272

69 4,614,336
4,614,337
117 4,614,338

CLASS 273

26 R 4,614,339
60 B 4,614,340
73 C 4,614,341
85 CP 4,614,342
186 A 4,614,343
283 4,614,344
381 4,614,345

CLASS 277

34 4,614,346
184 4,614,347
188 A 4,614,348

CLASS 280

43.1 4,614,349
47.24 4,614,350
91 4,614,351
204 4,614,352
406 A 4,614,353
415 R 4,614,354
438 R 4,614,355
477 4,614,356
507 4,614,357
689 4,614,358
699 4,614,359

CLASS 281

45 4,614,360

CLASS 282

8 R 4,614,361
9 R 4,614,362
22 R 4,614,363

CLASS 283

45 4,614,364
59 4,614,365
70 4,614,366
102 4,614,367

CLASS 285

10 4,614,368
55 4,614,369
150 4,614,370
231 4,614,371
356 4,614,372

CLASS 290

1 R 4,614,875

CLASS 292

318 4,614,373
337 4,614,374

CLASS 296

97 G 4,614,375
224 4,614,376

CLASS 297

19 4,614,377
92 4,614,378

CLASS 299

39 4,614,379
41 4,614,380

CLASS 303

24 A 4,614,381

CLASS 307

10 SB 4,614,876
64 4,614,877
106 4,614,878
130 4,614,879
200 A 4,614,880
219 4,614,881
443 4,614,882
449 4,614,883
475 4,614,884
513 4,614,885

CLASS 310

83 4,614,886
166 4,614,887
261 4,614,888
263 4,614,889

CLASS 312

273 4,614,383
281 4,614,384
320 4,614,385

CLASS 313

25 4,614,890
386 4,614,891
402 4,614,892
403 4,614,893
414 4,614,894
429 4,614,895
481 4,614,896

CLASS 315

224 4,614,897
4,614,898
411 4,614,899

CLASS 318

16 4,614,900
99 4,614,901
282 4,614,902
443 4,614,903
793 4,614,904

CLASS 320

18 4,614,905

CLASS 323

267 4,614,906

CLASS 324

312 4,614,907
458 4,614,908

CLASS 328

140 4,614,909

CLASS 329

50 4,614,910
101 4,614,911
110 4,614,912

CLASS 330

4.3 4,614,913
149 4,614,914
277 4,614,915
289 4,614,916

CLASS 331

1 A 4,614,917

CLASS 332

16 R 4,614,918

CLASS 333

133 4,614,919
135 4,614,920
139 4,614,921
147 4,614,923
161 4,614,922
167 4,614,924
174 4,614,925
244 4,614,926

CLASS 335

78 4,614,927
201 4,614,928
284 4,614,929
302 4,614,930

CLASS 339

17 C 4,614,388
17 CF 4,614,387
17 M 4,614,386
45 M 4,614,389
61 R 4,614,390
91 R 4,614,391
94 R 4,614,392
95 R 4,614,393
97 P 4,614,394
4,614,396
97 R 4,614,395
132 B 4,614,397
143 R 4,614,398
205 4,614,399
220 R 4,614,400

CLASS 340

19 R 4,614,931
52 B 4,614,932
347 AD 4,614,936
347 DD 4,614,933
4,614,935
365 C 4,614,937
567 4,614,938
573 4,614,939
636 4,614,940
747 4,614,941
815.11 4,614,942
825.00 4,614,943
825.06 4,614,944
870.03 4,614,945

CLASS 343

18 E 4,614,946
778 4,614,947

CLASS 346

75 4,614,948
76 PH 4,614,949
4,614,950
135.1 4,614,951
139 R 4,614,952
140 R 4,614,953
160 4,614,954
200 4,614,955
209 4,614,956

CLASS 350

96.21 4,614,401
4,614,402
252 4,614,403
280 4,614,404
286 4,614,405
334 4,614,406
339 R 4,614,407
388 4,614,408
410 4,614,409
507 4,614,410
516 4,614,411
632 4,614,412

CLASS 351

161 4,614,413

CLASS 354

284 4,614,414
354 4,614,415
400 4,614,416
403 4,614,417
407 4,614,418

CLASS 355

3 DD 4,614,419
4,614,420
14 C Re.32,253
14 CU 4,614,421
29 4,614,422
55 4,614,423
56 4,614,424
99 4,614,425

CLASS 356

1 4,614,426
237 4,614,427
246 4,614,428
343 4,614,429
394 4,614,430
401 4,614,431
4,614,432
4,614,433
418 4,614,434

CLASS 357

16 4,614,957
19 4,614,958
23.8 4,614,959
24 4,614,960
30 4,614,961
38 4,614,962
72 4,614,963
76 4,614,964

CLASS 358

44 4,614,965
4,614,966
75 4,614,967
93 4,614,968
101 4,614,969
120 4,614,970
147 4,614,971
4,614,972
153 4,614,973
227 4,614,974
4,614,975
257 4,614,976
260 4,614,977
263 4,614,978
335 4,614,979
4,614,980
337 4,614,981
342 4,614,982

CLASS 360

4 4,614,983
64 4,614,985
75 4,614,984
78 4,614,986
93 4,614,987
97 4,614,988
106 4,614,989
133 4,614,990
137 4,614,991

CLASS 361

160 4,614,992
257 4,614,993
303 4,614,994
308 4,614,995

CLASS 362

147 4,614,996
382 4,614,997

CLASS 363

16 4,614,998
28 4,614,999
41 4,615,000

CLASS 364

200 4,615,001
4,615,002
4,615,003
4,615,004
4,615,005
4,615,006
415 4,615,007
431.02 4,615,008
483 4,615,009
491 4,615,010
4,615,011
520 4,615,012
521 4,615,013
557 4,615,014
706 4,615,015
724 4,615,026
726 4,615,027
756 4,615,016
900 4,615,017
4,615,018
4,615,019

CLASS 365

184 4,615,020
189 4,615,021

CLASS 366

40 4,614,435
114 4,614,436
130 4,614,437
132 4,614,438
154 4,614,439
336 4,614,440

CLASS 367

179 4,615,022

CLASS 369

32 4,615,023
59 4,615,024

CLASS 370

32 4,615,025
58 4,615,028
89 4,615,029

CLASS 371

71 4,615,030

CLASS 372

36 4,615,031
45 4,615,032
99 4,615,033
4,615,034

CLASS 373

72 4,615,035
93 4,615,036

CLASS 374

130 4,614,441
158 4,614,442
163 4,614,443

CLASS 375

12 4,615,037
14 4,615,038
36 4,615,039
40 4,615,040
114 4,615,041

CLASS 376

154 4,614,635
451 4,614,636

CLASS 378

209 4,615,042

CLASS 381

27 4,615,043
109 4,615,044

CLASS 383

5 4,615,045

CLASS 384

45 4,614,382
138 4,614,444
368 4,614,445
484 4,614,446
616 4,614,447

CLASS 400

208 4,614,448

CLASS 401

287 4,614,449

CLASS 402

79 4,614,450

CLASS 403

14 4,614,451
27 4,614,452
30 4,614,453
62 4,614,454
133 4,614,455
322 4,614,456
4,614,457

CLASS 405

74 4,614,458
170 4,614,459
195 4,614,460
211 4,614,461
232 4,614,462

CLASS 407

49 4,614,463

CLASS 408

104 4,614,464

CLASS 409

81 4,614,465
179 4,614,466
199 4,614,467
211 4,614,468
219 4,614,469
230 4,614,470

CLASS 411

21 4,614,471

CLASS 414

27 4,614,472
68 4,614,473
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